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NorthWestern Energy

Mountain States Transmission Intertie

ENVIRONMENTAL REPORT

BIOLOGICAL RESOURCES TECHNICAL REPORT

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112100

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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

NorthWestern Energy (NorthWestern) proposes to construct, operate and maintain the MSTI 500kV transmission line to address the requests for transmission service from customers and relieve constraints on the high-voltage transmission system in the region. The new transmission line would begin at Townsend Substation which would be constructed in southwestern Montana about five miles south of Townsend, Montana, east of U.S. Highway 287 (US 287) in Broadwater County. The line would proceed south into southeastern Idaho connecting to Idaho Power Company's (IPCO) existing Midpoint Substation, 12 miles northeast of Jerome, Idaho. Figure 1.1-1 shows the substation locations and the alternative routes being considered.

The major projects components of the proposed action include the 500kV alternating current (AC) transmission line, a new Townsend Substation; construction of a new facility next to the existing Mill Creek Substation near Anaconda, Montana for the installation of a bank of phase shifting transformers and modifications to the existing Midpoint Substation in Idaho. Brief descriptions of the major project components are presented in the following sections.

1.1.1 NEW 500kV TRANSMISSION LINE

The MSTI 500kV AC transmission line would interconnect the new Townsend Substation with IPCO's existing Midpoint Substation. The MSTI 500kV transmission line would be between 400 and 430 miles long.

Various alternative route links have been identified as part of the siting study for the transmission line. During the route selection process, some of these alternative route links were combined into a limited number of end-to-end route and subroute alternatives. A preferred route was selected based on environmental and other considerations. Alternative route links, shown in Figure 1.1-1, cross Silver Bow, Jefferson, Broadwater, Deer Lodge, Beaverhead, and Madison counties in southwestern Montana, and Clark, Jefferson, Blaine, Butte, Bingham, Bonneville Power, Minidoka, Lincoln, and Jerome counties in southeastern Idaho. The links cross private, state (Idaho and Montana) and federal (primarily Bureau of Land Management [BLM] and U.S Forest Service [USFS]) land. There are a total of 1,150 miles of alternative route links, 582 miles in Montana and 568 miles in Idaho.

The MSTI 500kV transmission would be constructed mainly on guyed V steel lattice structures approximately 125 feet high. Less frequently, self-supporting steel lattice structures or self-supporting tubular steel structures approximately 125 feet high would be used. The guyed V structure would be used for most tangent segments of the line. Self-supporting steel lattice structures would be used in mountainous areas and at points where a line changes direction or terminates. Tubular steel monopoles may be used in areas of narrow right-of-way or where permanent land disturbance or the amount of land required for the structure must be minimized (e.g., agricultural land, developed and urban land, and some river and perennial stream crossings). The land permanently required for the structures would vary depending on structure type and terrain, ranging from 100 square feet for steel monopoles to 22,500 square feet for the guyed V structures. An area of approximately 200 by 200 feet (0.9 acre) per structure may be temporarily disturbed during construction.

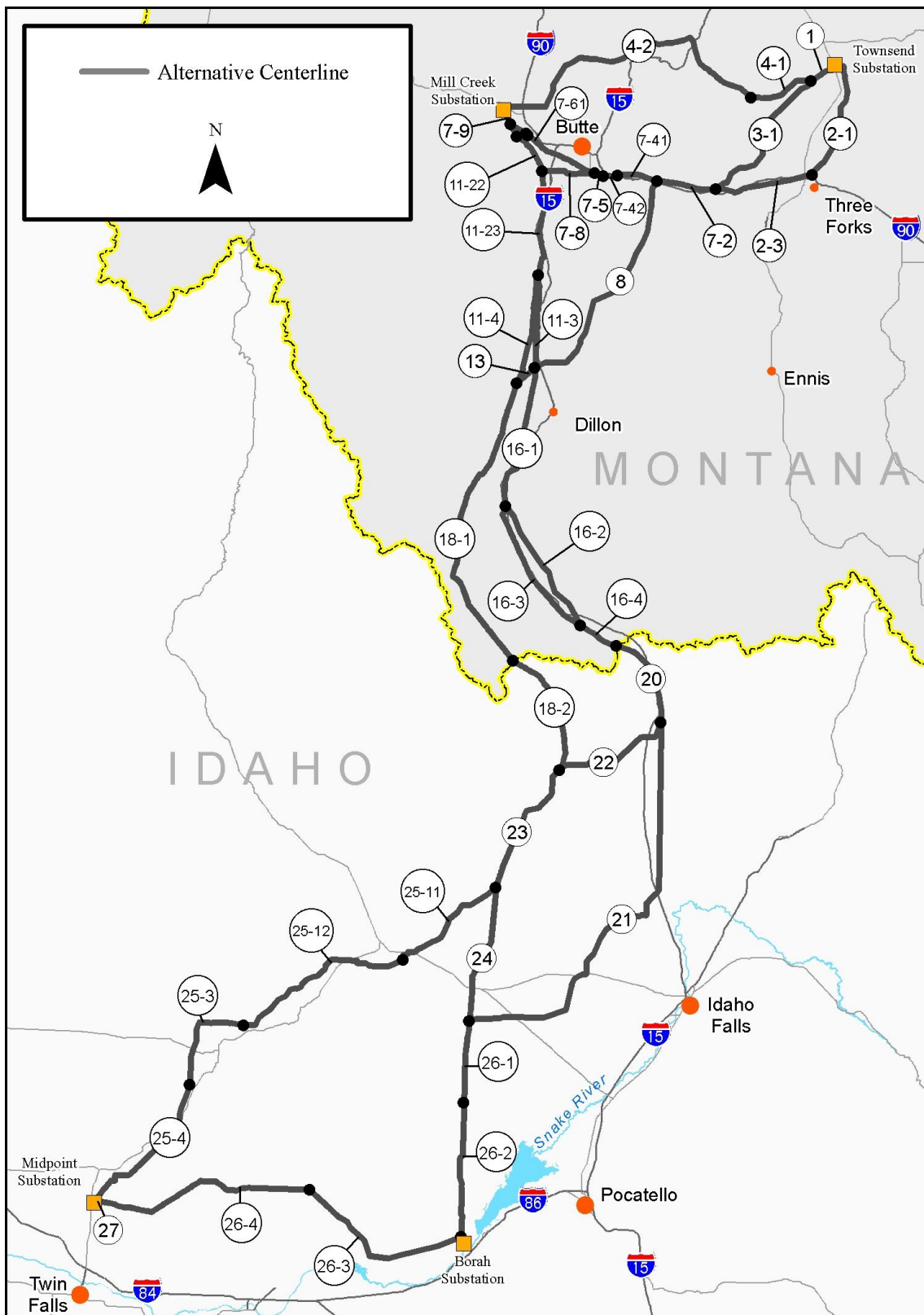


Figure 1-1.1 Project Area and Alternative Transmission Line Routes

The required right-of-way width is 220 feet and the average span length between the transmission structures would be approximately 1,400 feet (4 per mile) for the guyed V structures, 1,200 feet (4 per mile) for the self-supporting steel lattice structures, and 900 feet (6 per mile) for the self-supporting tubular steel monopole structures.

Access along the transmission line right-of-way would include using existing improved roads, using existing roads that require improvement, and building new roads in flat, sloping, steep, or very steep terrain. Permanent new roads would be graded to a travel service width of 14 feet.

In addition, during construction of the transmission line there would be temporary pulling and tensioning sites, material staging sites, and concrete batch plants.

1.1.2 New Townsend Substation

The new Townsend 500kV substation would be located in southwestern Montana, five miles south of Townsend, Montana, east of US 287 in Broadwater County, Montana. The current land use of the site is center-pivot irrigation. The parcel contains agricultural outbuildings and a residence, located about 1,030-feet south of the substation site. Adjacent land use is a mixture of center-pivot irrigation and pasture. The total size of the Townsend Substation site would be approximately 52 acres

1.1.3 MILL CREEK SUBSTATION

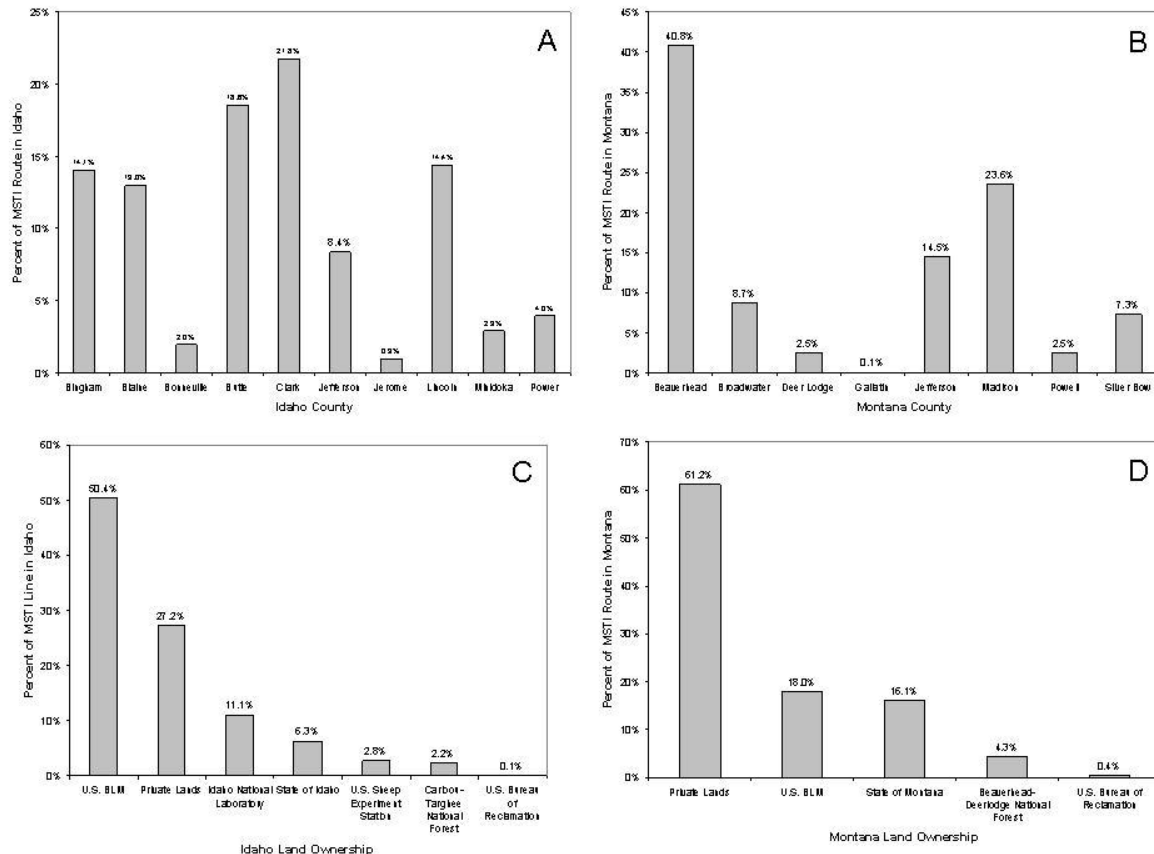
A new facility would be built adjacent to NorthWestern's existing Mill Creek Substation, located approximately three miles south of Anaconda, Montana. The proposed facility would be built to accommodate a bank of phase shifting transformers and other series capacitor banks and associated substation equipment. The MSTI 500kV line would not connect directly to or require modification of the existing substation. Engineering studies will be completed to determine the final layout of this new facility.

1.1.4 MIDPOINT SUBSTATION MODIFICATIONS

IPCO's existing Midpoint Substation located 10 miles north of Interstate 84 (I-84) in Jerome County, Idaho would be modified to accommodate the new MSTI 500kV transmission line. Engineering studies with IPCO will be completed to determine the ultimate modifications required at the Midpoint substation.

1.2 BIOLOGICAL RESOURCES OVERVIEW

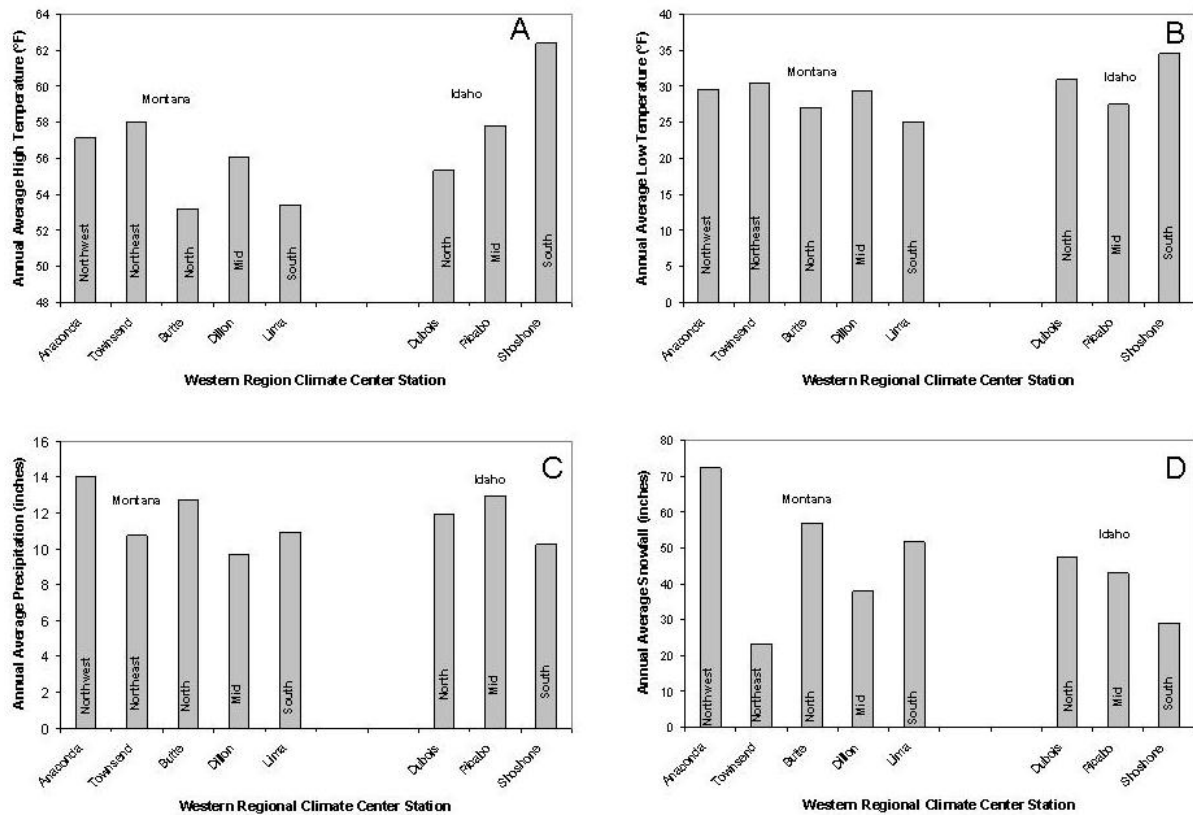
The MSTI project proposes to construct a 500kV transmission line from southeastern Idaho to southwestern Montana. The proposed line would span 350-400 miles from the southern terminus at Midpoint Substation in Jerome County, Idaho to the northern terminus at Townsend Substation in Broadwater County, Montana. The proposed line traverses 10 counties in Idaho and nine counties in Montana. Private, state, and federal jurisdictional lands are crossed in both states. Jurisdictional and county lands crossed by the MSTI alternative route links are summarized in Figure 1.1-2. Biological resources are managed according to the jurisdictional associations in many cases. Biological resources falling on private land are general not under land management authority. Agencies contacted regarding biological information are included in Appendix A.



(A) County land intersected by the MSTI line in Idaho. (B) County land intersected by the MSTI line in Montana. (C) Land jurisdiction intersected by the MSTI line in Idaho. (D) Land jurisdiction intersected by the MSTI line in Montana.

Figure 1.1-2 MSTI Land Associations in Idaho and Montana

The Project traverses the Continental Divide (Divide) at the Idaho and Montana Border. In Idaho the alternative route links are west of the Divide and in Montana the alternative route links are east of the Divide. The regional climate is characterized by average annual high and low temperatures in the upper 50's and upper 20's (°F) respectively (Figure 1.1-3, WRCC 2006). Average annual precipitation varies across the project area from 9.5 inches to over 14 inches with locally higher amounts in mountainous areas. In Montana, the alternative route links are characterized as Middle Rockies level III Environmental Protection Agency (EPA) ecoregions. In Idaho, the alternative route links are characterized by three level III EPA ecoregions; Middle Rockies, Snake River Plain, and Idaho Batholith. The Middle Rockies ecoregion is described climactically as lacking a strong maritime influence of the Northern Rockies. Mountain vegetation contains Douglas-fir, subalpine fir, Engelmann spruce forests and alpine areas; Pacific tree species are never dominant. Forests can be open. Foothills are partly wooded or shrub- and grass-covered. Intermontane valleys are grass- and/or shrub-covered and contain a mosaic of terrestrial and aquatic fauna that is distinct from the nearby mountains. Many mountain-fed, perennial streams occur and differentiate the intermontane valleys from the Northwestern Great Plains.



(A) Average annual high temperature along regional portions of the proposed MSTI routes in Idaho and Montana based on Western Regional Climate Center (WRCC) data. **(B)** Average annual low temperature along regional portions of the proposed MSTI routes in Idaho and Montana based on WRCC data. **(C)** Average annual precipitation along regional portions of the proposed MSTI routes in Idaho and Montana based on WRCC data. **(D)** Average annual snowfall along regional portions of the proposed MSTI routes in Idaho and Montana based on WRCC data

Figure 1.1-3 MSTI Climate information along the propose routes in Idaho and Montana

1.3 RESOURCE ISSUES

Bald eagle nests – Bald eagle nests are located along major rivers and lakes throughout the Montana portion of the study area, including the Missouri, Boulder, Red Rock, Big Hole, Ruby, and Beaverhead Rivers. The highest concentrations of bald eagle nests occur along the lower Big Hole River.

Great blue heron rookeries – Great blue heron rookeries occur along major rivers throughout the study area along the major rivers.

Greater sage-grouse leks – Concentrations of greater sage-grouse leks occur in upper portions of the Big Hole River valley, and west/southwest of Dillon, Montana.

Greater sage-grouse key habitat – Key habitat for the greater sage-grouse closely matches the lek concentration areas including upper portions of the Big Hole River valley, and south and west of Dillon, Montana.

Sharp-tailed grouse key habitat – Key habitat for the sharp-tailed grouse occurs in the grasslands east of Three Forks, Montana and north of Whitehall, Montana.

Northern goshawk nests – Large concentrations of northern goshawk nests occur in the Pioneer Mountains and Beaverhead Mountains (western portion of the study area). There are also known goshawk nests in the Gravelly Mountains north of Lima Reservoir, and in the vicinity of Butte, Montana.

Peregrine falcon nests – Peregrine falcon nests are concentrated in the lower Big Hole River valley and along the northern edge of the Centennial Mountains. There is also one nest located northwest of Henry's Lake.

Raptor Management Area – The Dillon Resource Management Plan designates three areas in the Lima Foothills and the Sweetwater Breaks as key raptor management areas (BLM 2006). These areas represent important nesting habitat for nine species of raptors, including the ferruginous hawk (BLM sensitive species). The Raptor Management Area supports one of the highest densities of nesting ferruginous hawks in North America. The Dillon RMP prohibits surface disturbances that would alter physical structures utilized by nesting ferruginous hawks within this area.

Trumpeter swan habitat – The Centennial Valley (Lima Reservoir and Red Rock Lakes) represents one of the two breeding areas for the Rocky Mountain Population of trumpeter swan (MFWP 2008). Red Rock Lakes NWR was specifically created to protect trumpeter swan breeding habitat. Trumpeter swan winter range includes the Red Rock Lakes area, Ennis Lake, and 15 miles of the Madison River upstream from Ennis Lake.

Mountain plover breeding/nesting habitat – There are several known Mountain plover breeding and nesting sites located in Jefferson County south of Boulder, Montana.

Townsend's big-eared bat roosts and hibernacula – There are several Townsend's big-eared bat roosts and hibernacula throughout the Montana portion of the study area. Concentration areas include the Lewis and Clark Caverns State Park area, the hills east of Twin Bridges, Montana, and the hills east and northeast of Melrose, Montana.

Crucial/critical elk and bighorn sheep winter range – Several small areas of critical elk winter range occur along the northern study area boundary in the vicinity of Boulder and Butte. Critical bighorn sheep winter range occurs in the Highland Mountains near Melrose, Montana and in the Tendoy Mountains west of Dell, Montana.

Wildlife movement corridors – Several corridors associated with large and small mammal, upland bird, and waterfowl migrations.

1.4 STUDY PERSONNEL

David Dean, Power Engineers Inc. (POWER), responsible for leading biological resources. Mr. Dean has led several environmental investigations in the Intermountain West. Prior to joining POWER, Mr. Dean was the lead biologist for a large consulting firm in Albuquerque, NM. Mr. Dean's project experience includes leading biological investigations for transmission line, wind development, oil and gas development, and land management planning projects. Mr. Dean was worked with several state

and federal agencies throughout the western and Midwestern United States (U.S.). Mr. Dean holds Bachelor's and Master of Science degrees in biology.

William Doering, POWER, was the biologist responsible for writing species accounts and reviewing document content. Mr. Doering has lead and managed several environmental investigations in the western U.S. Mr. Doering holds a Bachelor's of Art in biology/religious studies and a Master of Science in Biology.

Dan Hengel, POWER, was the biologist responsible for writing species accounts and reviewing document content. Mr. Hengel has lead and managed several environmental investigations in the western U.S. Mr. Hengel assisted with botanical species accounts, and technical review of overall biological resources. Mr. Hengel holds a Bachelor's of Science in wildlife and fisheries sciences and a Master of Science in zoology and physiology.

Sam Milodragovich, serves as a biologist for NWE. Mr. Milodragovich consulted with state and federal agencies, provided technical guidance, and assisted with field verification. Mr. Milodragovich has drafted policy guideline for the Avian Power Line Interaction Committee and has worked on minimizing impacts to wildlife from energy infrastructure. Mr. Milodragovich holds a Bachelor's of Science.

2.0 REGULATORY FRAMEWORK

The applicable Federal and State laws, regulations, and administrative designations relative to plant and wildlife species and their habitats along the MSTI alternative route links and are summarized below.

Endangered Species Act (7 U.S.C. 136; 16 U.S.C. 460 et seq.)

The Endangered Species Act (ESA) provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The ESA is implemented by two federal agencies, the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries), which have the ability to officially list plant and animal species as "endangered" or "threatened." Section 7 of the ESA imposes an affirmative duty on federal agencies to ensure that their actions (including permitting) are not likely to jeopardize the continued existence of a listed species or result in the destruction or modification of their habitat.

Migratory Bird Treaty Act (16 U.S.C. 703)

The Migratory Bird Treaty Act (MBTA) makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird, except under the terms of a valid permit issued by the USFWS.

The Bald and Golden Eagle Protection Act (16 CFR 668)

The Bald and Golden Eagle Protection Act (BGEPA) prohibits any form of possession or taking of both bald and golden eagles. The statute imposes criminal and civil sanctions as well as an enhanced penalty provision for subsequent offenses.

Montana- Fish and Wildlife

Title 87 of the Montana Code Annotated directs the Fish, Wildlife & Parks Commission to set the policies for the protection, preservation, management, and propagation of the wildlife, fish, game, furbearers, waterfowl, nongame species, and endangered species of the state.

Idaho Statutes- Fish and Game

Title 36 of the Idaho Statutes directs the Fish and Game Commission to preserve, protect, perpetuate, and manage all wildlife, including all wild animals, wild birds, and fish, within the State of Idaho.

BLM Sensitive Species

BLM Special Status Species Management 6840 establishes policy for the management and conservation of sensitive plant and animal species, and the ecosystems upon which they depend. Policy 6840 gives the State Director the responsibility of designating BLM sensitive species.

Forest Sensitive Species

Section 2670 of the Forest Service Manual delegates designation of sensitive species to each Regional Forester. Sensitive species are defined as: "Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution."

3.0 INVENTORY METHODS

For biological resources the MSTI study area extends one mile on either side of assumed alternative route link centerlines. The alternative route links start at the new Townsend Substation and proceed south and then west to the existing Midpoint Substation .

Biological resource data for the states of Montana and Idaho were obtained from a regional study conducted by POWER in 2006. Additionally, biological data were collected from scientific literature, existing POWER files, geographic information system (GIS) data sets, aerial photography and agency contacts. Sensitive species lists were obtained at the county level for species under the authority of ESA. Sensitive species lists for lands managed by the USFS are limited to species occurring on the Beaverhead and Caribou-Targhee National Forests. Sensitive species lists for lands managed by the BLM are limited to the Butte, Dillon, Upper Snake, Shoshone, and Burly Field Offices. State special status species list for Montana and Idaho are included in Appendix B. Elemental occurrence data for species in Montana and Idaho was obtained from Montana Natural Heritage and Idaho Conservation Data Center respectively. Agency personnel were asked to provide information on potential or known occurrences of sensitive species of wildlife and plants, and on habitats of concern within the study area. Information was requested from the Bureau of Land Management (BLM) (Butte, Dillon, Upper Snake, Burly, and Shoshone), USFS (Beaverhead-Deerlodge, Caribou-Targhee), USFWS, Montana Fish, Wildlife and Parks, Idaho Department of Fish and Game, and the Idaho and Montana natural Heritage Programs. A comprehensive list of federal and state special status species for Idaho and Montana is included in Section 3 and Appendix B respectively. A complete list of individuals and agencies contacted is presented in Appendix A. Habitat data was derived from aerial photo-interpretation, GAP data land cover data, and field checking. Field verification locations and photographs are included in Appendix D.

3.1 DATA CATEGORIES

Data collected for the study area includes: vegetation types which were condensed into general habitat types; significant wildlife habitats; and known sensitive species locations. A brief description of the data used and biological relevance is listed below.

- **Vegetation types**

Vegetation data is a compilation of 21 land use categories, categorized into seven vegetation communities which are synonymously used as habitat types for the Project. The data was generated from aerial photography (National Agriculture Photo Imagery, 2004 for Idaho and 2005 for Montana), Idaho and Montana GAP data, field verification, and agency input.

- **Significant wildlife habitats**

Wildlife habitat was classified based on vegetation cover. This approach makes the assumption that suitable habitat equates to species presence. This approach would likely result in an overestimate of species (a conservative approach). In cases where species specific habitat information was available (i.e. sage grouse habitat) refinements were made, to account for the overestimations. Data was available for the following significant habitats:

- Elk, mule deer, moose, and bighorn sheep wintering habitat
- Elk summer habitat

- Stream crossings
- Class 1 fisheries
- Nesting Bald Eagles
- Wildlife movement corridors
- Grouse leks and habitat
- Waterfowl use areas
- Potential or known localities of sensitive species
 - Sensitive species locations were derived from the Idaho Conservation Data Center and the Montana Natural Heritage Program databases. Special status species were assigned habitat and link associations based on biological requirements.

Biological data sources for the Project include: the 2006 routing study (NWE 2006), literature searches, agency interviews, aerial photography, Idaho and Montana GAP, field verification checking, Montana Natural Heritage data, Idaho Conservation Data Center data, various species specific data sets from Montana Fish, Wildlife, and Parks, and Idaho Fish and Game Department, U.S. Geological Service (USGS) breeding bird survey data, and agency biological input.

3.2 FIELD VERIFICATION

Field investigation and verification was conducted where necessary during the fall of 2007 and spring of 2008. Field checking consisted of identifying general habitat characteristics, ground truthing GIS data, and capturing global positioning system (GPS) and photo points of check locations. Field verification trips were conducted during the weeks of September 16th, October 14th 2007, and January 20th, 2008. Over 250 field points have been checked and a total of 330 photos points have been taken in Montana and Idaho (see Appendix D).

Data was mapped for land cover and wildlife habitat. Land cover data was broken down into 21 unique categories. The 21 land cover categories were condensed into seven general habitat classifications. Biological data was mapped for elemental occurrences of species, habitat use, breeding areas, and migration routes.

4.0 RESOURCE INVENTORY RESULTS

4.1 VEGETATION

4.1.1 VEGETATION OVERVIEW

The study area is located within the Snake River Plain and Middle Rockies ecoregions (Omernik 1987). The Snake River Plain ecoregion encompasses the southern portion of the study area located in Idaho, and is primarily comprised of sagebrush steppe, lava fields, and agricultural lands (McGrath *et al.* 2002). The northern and central portions of the study area are located in the Middle Rockies ecoregion, which primarily contains consist of spruce-fir forests in the mountains and sagebrush steppe and grasslands in the foothills and valleys (McGrath *et al.* 2002).

Vegetation communities in the northern portion of the study area are dominated by coniferous forests intermixed with grasslands, agriculture and pockets of sagebrush steppe. In the central portion of the study area, vegetation communities transition to one dominated primarily by sagebrush intermixed with fingers of coniferous forests, agriculture, shrublands and grasslands. The southern portion of the study area is more xeric and is dominated primarily by sagebrush, with smaller areas of agriculture, lava fields, and grasslands.

The major vegetative communities in the study area are based upon Montana and Idaho GAP data (Redmond *et al.* 1998, Scott *et al.* 2002), aerial-photo-interpretation, field checking and photo-points. The major vegetation categories considered for the project include: conifer and broadleaf forests, grasslands, shrubs (shrub communities other than sagebrush), sagebrush, riparian and wetlands areas, sparse vegetation communities, and anthropogenic communities. A brief description of these major vegetation categories is listed below.

4.1.2 GENERAL VEGETATION COMMUNITIES

4.1.2.1 Conifer and Broadleaf Forest Communities

The conifer and broadleaf forest communities are represented by juniper, mixed conifer, and mixed conifer deciduous forest landuse categories. The conifer forest cover type includes whitebark pine (*Pinus albicaulis*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), subalpine fir (*Abies lasiocarpa*), Douglas fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*) forests. Associated shrub species can include huckleberry (*Vaccinium* spp.), snowberry (*Symphoricarpos* spp.), and ninebark (*Physocarpus malvaceus*). Associated grass and forb species include bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), beargrass (*Xerophyllum tenax*), smooth woodrush (*Luzula hitchcockii*), and arnica (*Arnica* spp.).

In the study area, broadleaf forests typically occur in stands intermixed with coniferous forest. Broadleaf species primarily occur in moist forest areas, near riparian areas, or woody draws. Dominant species present in these mixed forests include aspen (*Populus tremuloides*), bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), plains cottonwood (*Populus deltoides*), birch (*Betula* spp.), grand fir (*Abies grandis*), Douglas-fir, Engelmann spruce, subalpine fir, western larch (*Larix occidentalis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*). Associated shrub species include alder (*Alnus* spp.), huckleberry, serviceberry (*Amelanchier alnifolia*), thimbleberry (*Rubus parviflorum*), snowberry, and mountain-lover (*Pachistima*

myrsinites). The conifer and broadleaf forest communities are traversed by approximately 5.5 % of all the alternative route links in the Project. The majority (99%) of this community type occurs along the alternative route links in Montana.

4.1.2.2 Grassland Communities

The grassland community is represented solely by the grassland landuse category. Grasslands in the study area are dominated primarily by short to medium height grasses and forbs. These grasslands typically occur in valleys and foothills and on middle to high elevation slopes on south aspects. Dominant species include arrowleaf balsamroot (*Balsamorhiza sagittata*), bluebunch wheatgrass, blue grama (*Bouteloua gracilis*), bluestem (*Andropogon* spp.), green needlegrass (*Stipa viridula*), Idaho fescue, lupine (*Lupinus* spp.), needle and thread grass (*Hesperostipa comata*), rough fescue (*Festuca scabrella*), Timothy grass (*Phleum pratense*), and western wheatgrass (*Pascopyrum smithii*). A portion of these native grasslands are in a disturbed state. Vegetation in these locations can include bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), common dandelion (*Taraxacum officinale*), crested wheatgrass (*Agropyron cristatum*), field brome (*Bromus arvensis*), leafy spurge (*Euphorbia esula*), smooth brome (*Bromus inermis*), spotted knapweed (*Centaurea maculosa*), St. Johnswort (*Hypericum perforatum*), western ragweed (*Ambrosia* spp.), and yellow sweetclover (*Melilotus officinalis*). The grassland community is traversed by approximately one-third of all the alternative route links in the Project. The majority (81%) of this community type occurs along the alternative route links in Montana.

4.1.2.3 Shrubland Communities (other than sagebrush)

The shrubland community is represented by bitterbrush and mixed shrubland landuse categories. Xeric shrublands in the study area occur primarily in valleys and low elevation mountain slopes where mixed shrubs are dominant with an understory of grasses and forbs. Dominant shrub species present in xeric shrublands include bitterbrush (*Purshia tridentata*), creeping juniper (*Juniperus horizontalis*), greasewood (*Sarcobatus* spp.), mountain mahogany (*Cercocarpus* spp.), rabbitbrush (*Chrysothamnus* spp.), four-wing saltbush (*Atriplex canescens*), spiny hopsage (*Grayia spinosa*), and budsage (*Artemisia spinescens*). Associated grass species include bluebunch wheatgrass, blue gramma, Idaho fescue and western wheatgrass.

Mesic shrublands in the study area occur in mountain areas in draws and valleys. Mesic shrublands are dominated by alder, buffalo berry (*Shepherdia argentea*), ceanothus (*Ceanothus* spp.), huckleberry, Labrador tea (*Ledum glandulosum*), ninebark, mountain lover, mountain heath (*Phyllodoce empetrifolia*), shiny-leaf spiraea (*Spiraea betulifolia*), sumac (*Rhus* spp.), snowberry, serviceberry, and whortleberry (*Vaccinium scoparium*). Common associated species include arnica, beargrass, and pinegrass (*Calamagrostis rubescens*). The shrubland community is traversed by approximately 5.5% of all the alternative route links in the Project. The majority (76%) of this community type occurs along the alternative route links in Montana.

4.1.2.4 Sagebrush Communities

The sagebrush community is represented by low and big sagebrush landuse categories. Sagebrush (*Artemisia* spp.) shrublands occur primarily in valleys and occasionally occur on low to mid elevation mountain slopes. The species of sagebrush present depends on site specific requirements such as elevation, slope, aspect, precipitation, and soil type. Sagebrush species present within the study area include basin big sagebrush (*A. tridentata* ssp. *tridentata*), mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), and Wyoming big sagebrush (*A. tridentata* ssp. *wyomingensis*), silver sage (*A. cana*), and black sagebrush (*Artemisia nova*). Associated grass and forb species include bluebunch wheatgrass,

blue grama, Idaho fescue, and western wheatgrass. The sagebrush community is traversed by almost half (47.5%) of all the alternative route links in the Project. The majority (71%) of this community type occurs along the alternative route links in Idaho.

4.1.2.5 Riparian, Wetland, and Water Communities

The riparian, wetland, and water communities are represented by riparian shrub, riparian tree, cottonwood, marsh, and water landuse categories. Forested riparian areas are dominated by conifers, broadleaf species or a mixture of both. Dominant conifer species present include Douglas fir, Engelmann spruce, grand fir, subalpine fir, western hemlock and western red cedar. Dominant broadleaf species present in riparian areas include aspen, birch, black cottonwood (*Populus trichocarpa*), bur oak, green ash, and plains cottonwood. Associated shrub species present in forest dominated riparian areas include alder, bunchberry (*Cornus canadensis*), serviceberry, thimbleberry, and willow. Within shrub dominated riparian areas, species of willow are dominant. Additional species present in these areas include alder, black hawthorn (*Crataegus douglasii*), bog birch (*Betula glandulosa*), currant (*Ribes* spp.), red-osier dogwood (*Cornus stolonifera*), and water birch (*Betula occidentalis*).

Wetlands dominated by graminoid and forb species are also present in the study area. Species present in wetlands include rushes (*Juncus* spp.), bluejoint reedgrass (*Calamagrostis canadensis*), sedges, bulrushes (*Scirpus* spp.), spikerush (*Eleocharis* spp.) cinquefoil (*Potentilla* spp.), cattails (*Typha* spp.), saxifrage (*Saxifraga* spp.), and tufted hairgrass (*Deschampsia caespitosa*).

The riparian, wetland, and water communities are traversed by approximately 3.5% of all the alternative route links in the Project. The majority (87%) of this community type occurs along the alternative route links in Montana.

4.1.2.6 Sparse Vegetation Communities

The sparse vegetation community is represented by rock, vegetated lava, and mixed barren landuse categories. Vegetated lava is lava with greater than 5% total vegetation cover. Plants usually occur on islands or pockets in the lava flow, soils are thin. Mixed barren land is generally defined as barren land and exposed soil with less than 5% total vegetative cover. Rock communities are defined as exposed rock, rock outcrops, talus or scree slopes with less than 5% vegetative cover. Species that may occur in these communities include: Torrey's milkvetch (*Astragalus calycosus*), basalt milkvetch (*Astragalus filipes*), lava aster (*Ionactis alpina*), fennel-leaved desert parsley (*Lomatium foeniculaceum*), tufted evening-primrose (*Oenothera caespitosa*), woolly groundsel (*Packera cana*), various phlox species (*Phlox* spp.), Indian ricegrass (*Achnatherum hymenoides*), and broom snake weed (*Gutierrezia sarothrae*). The sparse vegetation communities are traversed by approximately 0.5% of all the alternative route links in the Project. The majority (63%) of this community type occurs along the alternative route links in Montana.

4.1.2.7 Anthropogenic Communities

The anthropogenic community is represented by irrigated and non-irrigated agriculture, center pivot irrigation agriculture, urban, and disturbed. The anthropogenic community is traversed by approximately 5.4% of all the alternative route links in the Project. The majority (52%) of this community type occurs along the alternative route links in Montana. This community type will not be included in the biological resource section. Further detail about this community type can be found in the Land Use Technical report.

4.1.3 MONTANA VEGETATION COMMUNITIES

Vegetation associated with the alternative route links in Montana is dominated by grassland and sagebrush (47% and 25% respectively). A summary of overall vegetation in Montana is included in Figure 4.1-1. Vegetation summarized by link in Montana is included in Table 4.1-2. A brief description of the dominant vegetation associated with the alternative route links is included below. The alternative route links associated with the Montana portion of the project area do not contain any vegetated lava, mixed barren land, and bitterbrush vegetation communities.

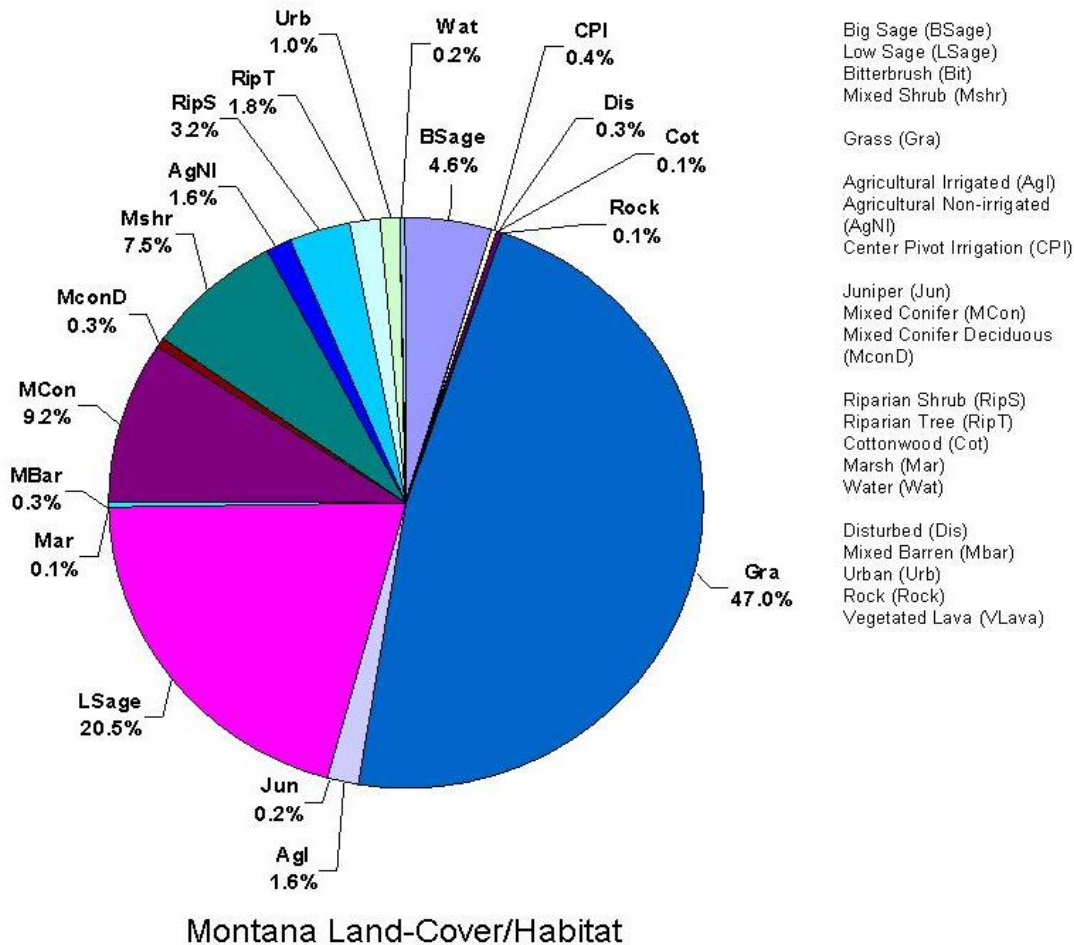


Figure 4.1-1 Summary of overall Montana vegetation categories

Link 1

Link 1 is located in the northeastern portion of the project area near Townsend, Montana. Link 1 crosses the Missouri River, just east of Townsend. Riparian tree and shrub communities are associated with the river crossing. Grasslands are dominant vegetation community along Link 1. Riparian shrub is the secondary dominant community type.

Link 2-1

Link 2-1 is located in the northeastern portion of the project area, this link leaves Townsend, Montana south toward Trident. Link 2-1 crosses the Missouri River south of Townsend. Riparian tree and

shrub communities are associated with the river crossing. Grasslands are dominant vegetation community along Link 2-1. Mixed shrub is the secondary dominant community type. Link 2-1 contains the largest proportion of center pivot irrigation and water land cover types, and the second largest proportion of mixed shrub.

Links 2-2 and 2-3

Links 2-2 and 2-3 are located in the northeastern portion of the project area, these links leave Three Forks and head west to Whitehall. Links 2-2 and 2-3 cross the Boulder River east of Whitehall. Riparian tree and shrub communities are associated with the river crossing. Grasslands are dominant vegetation community along Links 2-2 and 2-3. Mixed shrub is the secondary dominant community type. Links 2-2 and 2-3 contains the largest proportion of non-irrigate agricultural land.

Link 3-1

Link 3-1 is located in the northeastern portion of the project area. Link 3-1 leaves Link 1 south to Whitehall. Link 3-1 crosses the Boulder River north of Whitehall and Crow Creek just south of the Link 1 node. Riparian tree and shrub communities are associated with the river crossing. Grasslands are dominant vegetation community along Link 3-1. Mixed conifer is the secondary dominant community type. Link 3-1 contains the second largest proportion of non-irrigated agricultural land.

Link 3-2

Link 3-2 is located in the north central portion of the project area. Link 3-2 is located north of Cardwell. Grassland is the dominant vegetation community along Link 3-2.

Link 4-1

Link 4-1 is located in the north central portion of the project area. Link 4-1 leaves Link 1 west toward the Boulder Valley. Link 4-1 crosses Crow Creek west of the intersection with link one. Riparian tree and shrub communities are associated with the river crossing. Low sage is the dominant vegetation community along Link 4-1. Grassland is the secondary dominant community type. Link 4-1 contains the second largest proportion of juniper land cover.

Link 4-2

Link 4-2 is located in the north central portion of the project area. Link 4-2 leaves Link 4-1 north and then west toward Anaconda. Link 4-2 parallels portions of the Boulder River in the Beaverhead National Forest and crosses Silver-Bow Creek south of Warm Springs. Riparian tree and shrub communities are associated with the river crossing. Mixed conifer is the dominant vegetation community along Link 4-2. Grassland is the secondary dominant community type. Link 4-2 contains the largest proportion of mixed conifer, mixed conifer-deciduous tree, riparian tree and shrub, and water. Link 4-2 also contains the second largest proportion of cottonwood land cover.

Link 4-3

Link 4-3 is located in the north central portion of the project area. Link 4-3 leaves Link 4-1 south through the Jefferson Valley. Link 4-3 crosses the Jefferson River near milepost (MP) 8.5 and parallels portions of the Jefferson River through the Valley. Riparian tree and shrub communities are associated with the river crossing. Grassland is the dominant vegetation community along Link 4-3. Low sage is the secondary dominant community type. Link 4-3 contains the second largest proportion of juniper land cover.

Link 4-4

Link 4-4 is located in the north central portion of the project area near Whitehall. Grassland is the dominant vegetation community along Link 4-3.

Links 7-1 and 7-2

Links 7-1 and 7-2 are located in the north central portion of the project area. Links 7- and 7-2 leave Whitehall and head west toward Butte. Links 7-1 and 7-2 cross the Jefferson River near MP 6.5. Riparian tree and shrub communities are associated with the river crossing. Grassland is the dominant vegetation community along Links 7-1 and 7-2. Mixed shrub is the secondary dominant community type. Link 7-1 contains the second largest proportion of urban land cover.

Links 7-3 and 7-41

Links 7-3 and 7-41 are located in the north central portion of the project area, east of Butte. Grassland is the dominant vegetation community along Links 7-3 and 7-41. Low sage and mixed conifer are the secondary dominant community types. Link 7-3 contains the large proportion of rock land cover. Link 7-41 contains the second largest proportion of mixed conifer-deciduous land cover.

Links 7-42, 7-43, and 7-5

Links 7-42, 7-43, and 7-5 are located in the north central portion of the project area, south of Butte. Grassland is the dominant vegetation community along Links 7-42, 7-43, and 7-5. Mixed conifer is the secondary dominant community type. Link 7-5 contains the largest proportion of urban and rock land cover.

Link 7-61

Links 7-61 is located in the north western portion of the project area, southwest of Butte. Grassland is the dominant vegetation community along Link 7-61. Low sage brush is the secondary dominant community type. Link 7-61 contains the largest proportion of mixed barren land and the second largest proportion of disturbed land cover.

Link 7-62

Links 7-62 is located in the north western portion of the project area, west of Butte. Grassland is the dominant vegetation community along Link 7-62.

Link 7-72

Links 7-72 is located in the northwest portion of the project area, northeast of Butte. Grassland is the dominant vegetation community along Link 7-72. Riparian shrub and irrigated agriculture are the secondary dominant community types.

Link 7-8

Link 7-8 is located in the northwestern portion of the project area, west of the southern Butte Substation. Grassland is the dominant vegetation community along Link 7-8. Low sage is the secondary dominant community type.

Link 7-9

Link 7-9 is located in the northwestern portion of the project area, south of Anaconda. Grassland is the dominant vegetation community along Link 7-9. Low sage and mixed shrub are the secondary dominant community types.

Link 8

Link 8 is located in the northwestern portion of the project area. Link 8 runs through the Jefferson River Valley. Link 8 crosses the Big Hole River near MP 37. Riparian tree and shrub communities are associated with the river crossing. Grassland is the dominant vegetation community along Link 8.

Low sage and mixed shrub are the secondary dominant community type. Link 8 contains the largest proportion of grassland land cover and third largest proportion of mixed shrub land cover.

Link 11-21

Link 11-21 is located in the northwestern portion of the project area, south of Anaconda. Mixed conifer is the dominant vegetation community along Link 11-21. Grass and low sage are the secondary dominant community type. Link 11-21 contains the second largest proportion of mixed conifer land cover.

Link 11-22

Link 11-22 is located in the northwestern portion of the project area, south of Anaconda. Grassland is the dominant vegetation community along Link 11-22. Low sage is the secondary dominant community type. Link 11-22 contains the second largest proportion of irrigated agriculture land cover.

Link 11-23

Link 11-23 is located in the northwestern portion of the project area. Link 11-23 heads south from the 7-8 node along I-15 toward Melrose. Grassland is the dominant vegetation community along Link 11-23. Low sagebrush is the secondary dominant community type.

Links 11-3 and 11-4

Links 11-3 and 11-4 are located in the northwestern portion of the project area. Links 11-3 and 11-4 head south from the 11-23 node toward Dillon. Grassland is the dominant vegetation community along Links 11-3 and 11-4. Low sage is the secondary dominant community type along both of these links. Links 11-3 and 11-4 crosses several creek bottoms (Rock, Willow, Cherry, and Birch Creeks). Riparian tree and shrub communities are associated with these creek crossings. Link 11-3 contains the largest proportion of cottonwood and irrigated agriculture and second largest proportion of riparian shrub and tree land cover. Link 11-4 contains the largest proportion of juniper land cover.

Link 13

Link 13 is located in the northwestern portion of the project area, north of Dillon. Link 13 connects Links 11-3 and 11-4. Low sage is the dominant vegetation community along Link 11-13.

Links 16 (1-4)

Link 16 is located in the central portion of the project area. Link 16 runs west of Dillon, east of Clark Canyon Reservoir, and south along the I-15 corridor to the Montana-Idaho border. Link 16 crosses the Beaverhead River. Riparian tree and shrub communities are associated with the river crossing. Low sage is the dominant vegetation community along Link 16. Grassland is the secondary dominant community type. Link 16 contains the largest proportion of low sage land cover and second largest proportion of center-pivot irrigation, grassland, mixed barren, and mix conifer-deciduous land cover.

Link 18-1

Link 18-1 is located in the central portion of the project area. Link 18-1 runs through the Big Sheep Basin, south to Bannack Pass at the Montana-Idaho border. Link 18-1 crosses the Medicine Lodge and Cabin Creeks. Riparian tree and shrub communities are associated with these creek crossings. Big sage is the dominant vegetation community along Link 18-1. Low sage and grassland are the secondary dominant community types. Link 18-1 contains the largest proportion of big sage and water land cover. Link 18-1 contains the second largest proportion of low sage, mixed barren, riparian-tree and -shrub land cover

4.1.4 MONTANA SPECIAL STATUS PLANT SPECIES

A total of 77 special status plant species are associated with the alternative route links in the state of Montana. These include 55 BLM sensitive species, 35 USFS and 77 State of Montana sensitive species. There is no USFWS list plant species in Montana associated with the MSTI routes. Montana special plant species habitat and potential link associations are listed in Table 4.1-1. Additional special status plant information is included in Appendices B and C.

Table 4.1-1 Montana Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association							General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed			
Austin knotweed (<i>Polygonum douglasii austina</i>)			X	X		✓							Upland meadows.	1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Beaked spikerush (<i>Eleocharis rostellata</i>)			X	X						✓			Wet alkaline soils, associated w/warm springs or fens.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Bitterroot milkvetch (<i>Astragalus scaphoides</i>)		X	X	X				✓					Sagebrush grasslands, silty soils, between rocky steep open slopes and level benches.	2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
California false-hellebore (<i>Veratrum californicum</i>)			X	X						✓			Wet meadows and streambanks in montane and subalpine zones.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Dense-Leaved Antennaria (<i>Antennaria densifolia</i>)			X	X							✓		Limestone talus.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Five-leaf Cinquefoil (<i>Potentilla quinquefolia</i>)			X	X							✓		Dry gravelly soil exposed ridges and slopes montane to alpine.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Hiker's gentian (<i>Gentianopsis simplex</i>)			X	X						✓			Fens, meadows, and seeps in montane and subalpine zones.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Idaho Sedge (<i>Carex parryana</i> ssp. <i>Idahoensis</i>)		X	X	X	X					✓		Wet meadows.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Jove's buttercup (<i>Ranunculus jovis</i>)			X	X				✓	✓			Sagebrush grasslands to open forest slopes in montane to subalpine.	2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Missoula Phlox (<i>Phlox kelseyi</i> var. <i>missoulensis</i>)			X	X		✓						Open exposed limestone-derived slopes in foothills and montane.	1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Payson bladderpod (<i>Lesquerella paysonii</i>)			X	X	X				✓		✓	Windswept, gravelly, calcareous ridgecrests, semi-open slopes and rocky floodplains, talus slopes, rocky clearings in conifer forests.	2-1, 3-1, 4-1, 4-2, 4-3, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-8, 11-21, 11-4, 16
Peculiar moonwort (<i>Botrychium paradoxum</i>)			X	X					✓	✓		Mesic meadows, w/spruce and lodgepole pine forests in montane and subalpine zones.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Pod grass (<i>Scheuchzeria palustris</i>)			X	X						✓		Wet organic soils of fens, usually w/sphagnum moss, in valley and montane.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Primrose monkeyflower (<i>Mimulus primuloides</i>)			X	X						✓		Fens, sphagnum bogs and wet meadows in montane and subalpine zones.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Storm saxifrage (<i>Saxifraga tempestiva</i>)			X	X						✓		Vernally moist, open soils in meadows, subalpine to alpine.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association					General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Stream orchid (<i>Epipactus gigantean</i>)			X	X						✓		Riparian wetland. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Tapertip onion (<i>Allium acuminatum</i>)			X	X		✓			✓			open areas, foothills and plains 1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Trianglelobe moonwort (<i>Botrychium crenulatum</i>)			X	X						✓	✓	Stream bottoms, around seeps, edges of marches, wet roadside swales. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Tufted club-rush (<i>Scirpus cespitosus</i>)			X	X						✓		Wet meadows and sphagnum bogs in montane to alpine. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Weber's saw-wort (<i>Saussurea weberi</i>)			X	X						✓		Rocky, moist meadows in alpine. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Western moonwort (<i>Botrychium hesperium</i>)			X	X		✓					✓	Dry to moist, gravelly and lightly disturbed soils of grasslands, meadows. 7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Alkali primrose (<i>Primula alkalina</i>)		X	X	X						✓		Moist to wet alkaline meadows, 6,300-7,200 ft. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Alpine meadowrue (<i>Thalictrum alpinum</i>)		X	X	X						✓		Moist montane and lower subalpine areas, moist alkaline meadows, peat to marl calcareous silt. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Arrow thelypody (<i>Thelypodium sagittatum</i> ssp. <i>Sagittatum</i>)		X		X						✓		Moist alkaline meadows, alkaline meadows often dry but may be wet vernally.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Ballhead ipomopsis (<i>Ipomopsis congesta</i> ssp. <i>Crebrifolia</i>)		X		X				✓			✓	Open, often eroding soil, sandy, of sagebrush steppe in the foothill zone.	2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Beautiful bladderpod <i>Lesquerella pulchella</i>		X	X	X		✓			✓		✓	Stony soils, subalpine slopes 8,600-9,200 ft., lower elevations, mtn. mahogany or limber pine woodland, also sparse grasslands.	2-1, 3-1, 4-1, 4-2, 4-3, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-8, 11-21, 11-4, 16
Beavertip draba (<i>Draba globosa</i> (Syn. <i>D. apiculata</i>))		X		X						✓		High elevation (above 9,500 ft) near or above treeline, moist sparsely vegetated.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Buff fleabane (<i>Erigeron ochroleucus</i> var. <i>ochroleucus</i> (Syn. <i>E. parryi</i>))		X		X		✓		✓	✓		✓	Skeletal, limestone derived soils, ridge crests, slopes and outcrops at 5,200 to 6,700 ft., nearby veg – sagebrush or juniper woodlands.	2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
California amaranth (<i>Amaranthus californicus</i>)		X		X							✓	Disturbed.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Cushion townsendia (<i>Townsendia condesata</i>)		X		X							✓	Open rocky limestone soils exposed ridges.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Cusick's horse-mint (<i>Agastache cusickii</i>)		X	X	X							✓	Talus slopes.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Dwarf purple monkeyflower (<i>Mimulus nanus</i>)		X		X							✓	Dry open often gravelly or sandy slopes, valleys to foothills.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Fendler's cat's-eye (<i>Cryptantha fendleri</i>)		X		X							✓	Sandhills, open areas of sand dunes.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Green molly (<i>Kochia Americana</i>)		X		X						✓		Saline, sandy clay loams, valleys to foothills.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Green Spleenwort (<i>Asplenium trichomanes-ramosum</i> (syn. <i>A. viride</i>))			X	X	X						✓	Crevices of limestone, shaded rocks and talus slopes.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Hall's rush (<i>Juncus hallii</i>)			X	X	X					✓		Moist to dry meadows and slopes, from valley to montane zones.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Hoary Phacelia (<i>Phacelia incana</i>)		X		X			✓				✓	Stony, limestone-derived soil, steep talus slopes in foothills, associated w/Mtn. mahogany.	2-1, 2-2, 2-3, 4-1, 4-2, 4-3, 7-1, 7-2, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Idaho fleabane (<i>Erigeron asperugineus</i>)		X		X							✓	Windswept rock or gravelly slopes and ridges in alpine zone.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
James stitchwort (<i>Pseudostellaria jamesiana</i> (Syn. <i>Stellaria jamesiana</i>))		X		X				✓				Woodland slopes in foothills or montane.	2-1, 3-1, 4-1, 4-2, 4-3, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-8, 11-21, 11-4, 16

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association					General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Large-leafed balsamroot (<i>Balsamorhiza macrophylla</i>)		X	X	X		✓		✓	✓			Sagebrush, grasslands, montane zone, also Douglas fir-lodgepole pine forest, in forest openings on steeper east-facing slopes with rockier and clayey soils. 1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13 16, 18-1
Lemhi beardtongue (<i>Penstemon lemhiensis</i>)		X	X	X		✓		✓	✓		✓	Rock outcrops, big sagebrush and bunchgrasses, open soils, openings in lodgepole pine. 1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13,16, 18-1
Lemmon's alkaligrass (<i>Puccinellia lemmonii</i>)		X		X						✓		Alkali meadows. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Lesser rushy milkvetch (<i>Astragalus convallarius</i> var. <i>convallarius</i> (Syn. A. <i>junciformis</i>))		X		X		✓						Hillsides, bluffs, benches, and valley floors, sandy loamy or clay soils. 1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Linearleaf fleabane (<i>Erigeron linearis</i>)		X		X		✓		✓	✓		✓	Dry, often rocky soils from foothills to moderate elevation, grasslands and mtn big sagebrush. 1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13,16, 18-1
Long sheath waterweed (<i>Elodea bifoliata</i> (Syn. E. <i>longivaginata</i>))		X		X						✓		Shallow water of ponds or lakes on the plains. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Low northern-rockcress (<i>Braya humilis</i>)		X		X						✓		Sparsely vegetated, moist, calcareous soil in alpine zone. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

¹X = sensitive ²T= threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
(Scientific Name)	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Marsh (false)felwort <i>(Lomatogonium rotatum)</i>		X		X						✓		Alkaline meadows and fens in montane zone.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Matted buckwheat <i>(Eriogonum caespitosum)</i>		X		X				✓				Dry, stony limestone, sagebrush steppe.	2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Meadow lousewort <i>(Pedicularis crenulata)</i>		X		X						✓		Riparian meadow habitat.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Meadow pennycress <i>(Thlaspi parviflorum)</i>		X		X		✓				✓		Sagebrush steppe mid-elevation, grasslands to alpine turf, moist habitat.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Mealy primrose <i>(Primula incana)</i>		X	X	X						✓		Saturated calcareous wetlands, seep habitat.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Musk-root <i>(Adoxa moschatellina)</i>		X	X	X						✓		shaded, damp cliffs and slopes	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Northwestern thelypody <i>(Thelypodium paniculatum)</i>		X		X						✓		Wet sedge meadows.	1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Painted milkvetch <i>(Astragalus ceramicus var. apus)</i>		X		X							✓	Sand dunes, needs early succession sand dune habitat.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association					General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Pink agoseris (<i>Agoseris lackschewitzii</i>)		X		X	✓					✓		Subalpine wet meadows where soil is saturated 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Prostrate hutchensia (<i>Hutchinsia procumbens</i>)		X		X				✓		✓		Vernally moist, alkaline soils of sagebrush steppe in the valley and lower montane zones. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Railhead milkvetch (<i>Astragalus terminalis</i>)		X		X		✓	✓	✓				Alkaline barren sites, valley grasslands, sagebrush. 1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Railroad Canyon wild buckwheat (<i>Eriogonum soliceps</i>)		X		X				✓			✓	Coarse alkaline clay soils, dry sparse veg, sagebrush, dry stony or shallow soils. 7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Rocky Mountain dandelion (<i>Taraxacum eriophorum</i>)		X		X						✓		Open riparian and wetland areas in foothills and montane, soils silty and saturated, 6,550, 6,900 -9,500 ft. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Sand wildrye (<i>Leymus flavescens</i> (Syn. <i>Elymus flavescens</i>))		X		X							✓	Sandy soils, sand dunes, and sandy roadsides. 7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Sapphire rockcress (<i>Arabis fecunda</i>)		X	X	X				✓	✓			Mod to steep slopes, sagebrush, ponderosa pine, limber pine woodland or sparse ag. spicatum grassland. 1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13 16, 18-1

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Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association					General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Showy golden eye (<i>Heliomeris multiflora</i> var. <i>multiflora</i> (Syn. <i>Viguiera multiflora</i>))		X		X					✓			Aspen woodlands and open slopes. 2-1, 3-1, 4-1, 4-2, 4-3, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-8, 11-21, 11-4, 16
Showy townsendia (<i>Townsendia florifera</i>)		X		X		✓		✓				Open soil on flats and eroding ridges of grasslands and sagebrush steppe in the foothill zone. 1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Silver chicken sage (<i>Sphaeromeria argentea</i>)		X		X		✓		✓				Shallow limestone soils of sagebrush steppe and dry rocky bunchgrass slopes. 1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Simple bog sedge (<i>Kobresia simpliciuscula</i>)		X		X						✓		Moist tundra in alpine zone. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Sitka columbine (<i>Aquilegia Formosa</i>)		X		X					✓	✓		Moist soil of open coniferous, cottonwood, or aspen forests. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Slender-branched popcorn flower (<i>Plagiobothrys leptocladus</i>)		X		X						✓		Drying mud on the shores of ponds in the plains and foothills. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Small yellow lady's-slipper (<i>Cypripedium parviflorum</i>)		X		X					✓	✓		Fens, damp mossy woods, seepage areas, moist forest-meadow ecotones. 1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

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Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Soft blazingstar (<i>Mentzelia Montana</i>)		X		X		✓						Grasslands and sparsely vegetated plains slopes.	1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Tapered-roor Indian potato (<i>Orogenia fusiformis</i>)		X	X	X		✓						Open slopes, ridges, and meadows, lower foothills to mid-montane.	1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Taper-tip desert-parsley (<i>Lomatium attenuatum</i>)		X		X							✓	Scree. Dry gravelly south or west facing slopes, rocky outcrops.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Thorn skeletonweed (<i>Stephanomeria spinosa</i> (Syn. <i>Lygodesmia spinosa</i>))		X		X		✓						Arid grasslands on stony loam at lower elevations, 5,000-6,400 ft.	1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Western boneset (<i>Ageratina occidentalis</i> ((Syn. <i>Eupatorium occidentale</i>))		X		X							✓	Rocky outcrops & slopes in montane & lower subalpine.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Whipple's beardtongue (<i>Penstemon whippleanus</i>)		X		X					✓		✓	Open rocky slopes, meadows of scattered timber, subalpine to alpine.	2-1, 3-1, 4-1, 4-2, 4-3, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-8, 11-21, 11-4, 16
White-stemmed globe-mallow (<i>Sphaeralcea munroana</i>)		X		X				✓				Open often calcareous soil of sagebrush grasslands in valley and foothills.	2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Wind River draba (<i>Draba ventosa</i>)		X		X							✓	Scree and shifting talus slopes.	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1

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Table 4.1-1 Montana Special Status Plant Species (cont.)

Common Name (Scientific Name)	Status ¹					General Habitat Association					General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Discoid Goldenweed (<i>Haplopappus macronema</i> var. <i>macronema</i>)			X	X							✓	Rocky open sparsely wooded slopes or coarse talus, 7,600 ft. elevation. 7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

**Table 4.1-2 Summary of Montana vegetation categories by proposed MSTI
alternative route link**

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4.1.5 IDAHO VEGETATION COMMUNITIES

Vegetation associated with the alternative route links in Idaho is dominated by low and big sagebrush (53% and 23% respectively). A summary of overall vegetation in Idaho is included in Figure 4.1-2. Vegetation summarized by link in Idaho is included in Table 4.1-3. A brief description of the dominant vegetation associated with the alternative route links is included below. The alternative route links associated with the Idaho portion of the project area do not contain any mixed conifer-deciduous, mixed barren land, rock, and disturbed vegetation communities.

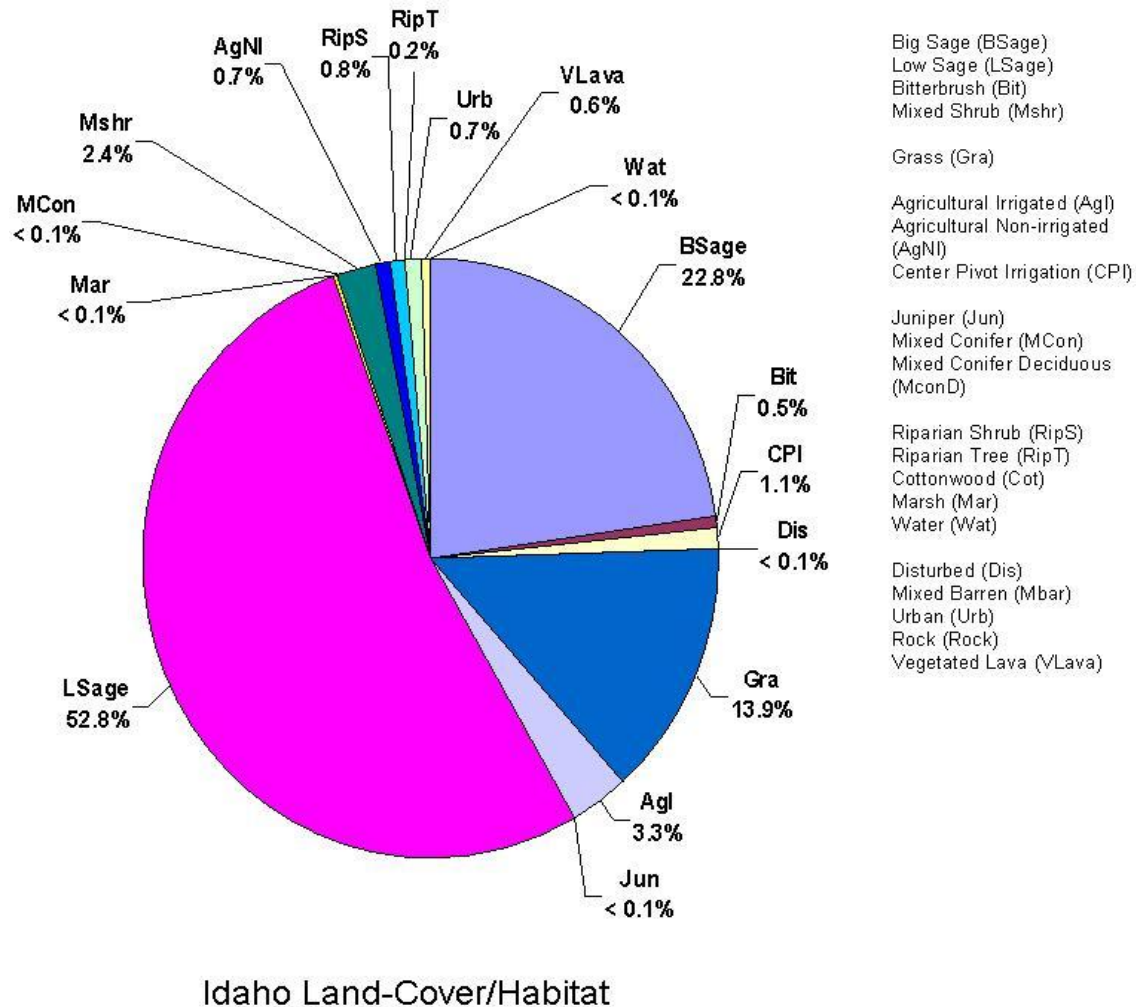


Figure 4.1-2 Summary of overall Idaho vegetation categories

Link 18-2

Link 18-2 is located in the central portion of the project area. Link 18-2 leaves the Montana-Idaho border south toward the Amps Substation. Big sage is the dominant vegetation community along Link 18-2. Low sage is the secondary dominant community type. Link 18-2 contains the largest proportion of big sage land cover.

Link 20

Link 20 is located in the central portion of the project area. Link 20 leaves the Montana-Idaho border south toward the U.S. Department of Agriculture Sheep Experimental Station. Low sage is the dominant community type along Link 20. Mixed shrub is the secondary dominant community type. Link 20 contains the largest proportion of riparian shrub and mixed conifer land cover types, and the second largest proportion of bitterbrush and mixed shrub land cover types.

Link 21

Link 21 is located in the central portion of the project area, this link leaves the USDA Sheep Experimental Station south and then east toward Idaho National Laboratory (INL) and end at Link 26-1. Low and big sagebrush are dominant vegetation communities along Link 21. Grassland is the secondary dominant community type. Link 21 contains the largest proportion of sagebrush and grassland habitat in Idaho and the second largest proportion of anthropogenic and shrubland (bitterbrush) habitat.

Link 22

Link 22 is located in the central portion of the project area. Link 22 leaves Link 21 west to Link 18-2, north of Idaho State Highway 22 (Idaho 22). Low and big sagebrush are dominant vegetation communities along Link 22. Grassland is the secondary dominant community type. Link 22 contains the largest proportion bitterbrush habitat.

Link 23

Link 23 is located in the central portion of the project area. Link 23 leaves Links 18-2 and 22, south toward INL and terminates in the west-central portion of INL. Link 23 crosses Birch Creek. Riparian tree and shrub communities are associated with this creek crossing. Big sagebrush and grassland are the dominant vegetation communities along Link 23. Link 23 contains the largest proportion of juniper and water habitat in Idaho.

Link 24

Link 24 is located in the south central portion of the project area. Link 24 leaves Link 23 south out of INL. Low sage is the dominant vegetation community along Link 24. Big sagebrush and grassland are the secondary dominant community types. Link 24 contains the largest proportion of mixed shrub and second largest proportion of urban land cover in Idaho.

Link 25-11

Link 25-11 is located in the north central portion of the project area. Link 25-11 leaves Links 23 and 24 southwest along the northwestern boundary of INL. Grassland is the dominant vegetation community along Link 25-11. Big and low sagebrush are the secondary dominant community types. Link 25-11 contains the third largest proportion of grassland in Idaho.

Link 25-12

Link 25-12 is located in the southwest portion of the project area. Link 25-12 leaves Link 25-11 southwest toward Carey, Idaho. Link 25-12 crosses the Big Lost River near MP 3. Riparian tree and shrub communities are associated with the river crossing. Big and low sagebrush are the dominant vegetation communities along Link 25-12. Mixed shrub is the secondary dominant community type. Link 25-12 contains the largest proportion of non-irrigated agricultural land and the second largest proportion of mixed shrub, riparian shrub and tree, and mix shrub land cover types.

**Table 4.1 -3 Summary of Idaho Vegetation Categories by Proposed MSTI Alternative
Route Link**

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Link 25-3

Link 25-3 is located in the southwest portion of the project area. Link 25-3 leaves 25-12 and heads west for nine miles and then south toward U.S. Highway 26-93 (US 26-93). Low sagebrush is the dominant vegetation community. Big sagebrush is the secondary dominant community type. Link 25-3 contains the second largest proportion of riparian tree land cover type in Idaho.

Link 25-4

Link 25-4 is located in the southwest portion of the project area. Link 25-4 leaves Link 25-3 and head southwest to the Midpoint Substation. Big and low sagebrush is the dominant vegetation community types. Grassland is the secondary dominant community types. Link 25-4 contains the large proportion of riparian tree and shrub land cover types. Link 25-4 contains the second largest proportion of urban and big sagebrush land cover types.

Link 26-1

Link 26-1 is located in the southeastern portion of the project area. Link 26-1 leaves Links 21 and 24 and heads directly south. Low sagebrush is the dominant vegetation community along 26-1. Mixed shrubland is the secondary dominant community type.

Link 26-2

Link 6-2 is located in the southeastern portion of the project area. Link 26-2 leaves Link 26-1 and heads directly south to the Borah Substation. Low sagebrush and irrigated agricultural land are the dominant vegetation community types along 26-1. Big sagebrush is the secondary dominant community type. Link 26-2 contains the largest proportion of center-pivot and irrigated agricultural habitat in Idaho and the second largest proportion of non-irrigated agricultural habitat.

Link 26-3

Link 26-3 is located in the southern portion of the project area. Link 26-3 leaves the Borah Substation and heads west to Brigham Point. From Brigham Point Link 26-3 heads northwest into Minidoka County. Low sagebrush is the dominant vegetation community type along 26-3. Grassland is the secondary dominant community type. Link 26-3 contains the second largest proportion of low sagebrush habitat.

Link 26-4

Link 26-4 is located in the southern portion of the project area. Link 26-4 leaves Links 26-3 and 31 heads west to the Midpoint Substation. Low and big sagebrush are the dominant vegetation community types along Link 26-4. Grassland is the secondary dominant community type. Link 26-4 contains the second largest proportion of low sagebrush habitat.

Link 27

Link 27 is located in the southern portion of the project area in the immediate area of the Midpoint Substation. Low sagebrush is the dominant vegetation community type along Link 27.

Link 28

Link 28 is located in the southern portion of the project area in the immediate area of the Midpoint Substation. Low sagebrush is the dominant vegetation community type along Link 28.

Link 30

Link 30 is located in the southeastern portion of the project area. Link 30 leaves Link 26-1 and heads west toward Craters of the Moon National Monument. Low sage is the dominant community type. Grassland is the secondary dominant vegetation community along Link 30.

Link 31

Link 31 is located in the southeastern portion of the project area. Link 31 leaves Link 30 and heads southwest through Craters of the Moon National Monument. Low sage is the dominant community type. Grassland is the secondary dominant vegetation community along Link 31.

4.1.6 IDAHO SPECIAL STATUS PLANT SPECIES

A total of 51 special status plant species may occur in the vicinity of the vicinity of the alternative route links. These include one species listed under the ESA (Ute Ladies' tresses), 32 species listed as BLM sensitive and 24 species listed as USFS sensitive. State special status plant species are included in Appendix A. Idaho special status plant species habitat and potential link associations are listed in Table 4-1.4. Additional special status plant information is included in Appendices B and C.

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Idaho Sedge (<i>Carex parryana</i> ssp. <i>Idaho</i>)		X	X	X	X					✓		Wet meadows.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Payson bladderpod (<i>Lesquerella paysonii</i>)			X	X	X				✓		✓	Windswept, gravelly, calcareous ridgecrests, semi-open slopes and rocky floodplains, talus slopes, rocky clearings in conifer forests.	21, 23, 25-2
Alkali primrose (<i>Primula alcalina</i>)		X	X	X						✓		Moist to wet alkaline meadows, 6,300-7,200 ft.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Bacigalupi's downingia (<i>Downingia bacigalupii</i>)		X			X					✓		Moist meadows and vernal pool ecosystems.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Biennial princesplume (<i>Stanleya confertiflora</i>)		X			X						✓	Western Idaho and eastern. Oregon dry hillsides, alkali meadows, barren clay slopes, pale gray chip-rock.	21, 23, 25-2
¹ X = sensitive ² T= threatened, E = endangered, EXP = experimental, C = candidate													
Blue gramma (<i>Bouteloua gracilis</i>)		X			X	X			✓			Grasslands and forest openings.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Bugleg goldenweed (<i>Haplopappus insecticuriis</i>)		X			X			✓		✓		Dry ground w/sagebrush, and vernally wet grasslands and meadows b/w 5,000 to 6,500 ft.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Buxbaum's sedge (<i>Carex buxbaumii</i>)		X			X					✓		Wet prairies, seepy areas.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Cache penstemon (<i>Penstemon compactus</i>)			X		X						✓	Limestone and dolomite outcrops.	21, 23, 25-2
Centennial rabbitbrush (<i>Chrysothamnus parryi</i> ssp. <i>Montanus</i>)		X			X						✓	Found only in high elevation habitat of Red Conglomerate Peaks near the Continental Divide.	21, 23, 25-2
Drummond's milkvetch (<i>Astragalus drummondii</i>)		X			X	✓						Common in grassy meadow, open field, rocky soil of hillsides, sandy soils.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
False mountain willow (<i>Salix pseudomonticola</i>)		X			X					✓		Streambanks and moist slopes, riparian zone.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Foothill sedge (<i>Carex tumicola</i>)			X		X	✓						Wet meadows, slopes	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association							General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed			
Garrett's firechalice (<i>Epilobium canum</i> spp. <i>garrettii</i> (syn. <i>Zauschneria</i> <i>garrettii</i>))			X		X		✓						Dry slopes and in chaparral.	18-2, 20, 21, 22, 24, 25-12, 25- 11, 26-1
¹ X = sensitive ² T= threatened, E = endangered, EXP = experimental, C = candidate														
Giant helleborine (<i>Epipactis</i> <i>gigantean</i>)		X			X					✓			Streambanks, lake margins, fens w/springs and seeps, often near thermal waters.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Grass-like spleenwort (<i>Asplenium</i> <i>septentrionale</i>)			X		X						✓		High montane, rocky crevices.	21, 23, 25-2
Green muhly (<i>Muhlenbergia</i> <i>racemosa</i>)			X		X	✓		✓	✓	✓			Dry to moist sites, streambanks, lake margins, 4,100 to 10,400 ft. (and dry slopes).	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Green needlegrass (<i>Stipa viridula</i>)		X	X		X	✓							Medium to fine textured soils, true and mixed prairie.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Green Spleenwort (<i>Asplenium</i> <i>trichomanes</i> - <i>ramosum</i> (syn. <i>A.</i> <i>viride</i>))			X	X	X						✓		Crevices of limestone, shaded rocks and talus slopes.	21, 23, 25-2
Hall's rush (<i>Juncus hallii</i>)			X	X	X					✓			Moist to dry meadows and slopes, from valley to montane zones.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Hall's orthotrichum moss (<i>Orthotrichum</i> <i>hallii</i>)		X			X						✓		Moss-soil crust, on granite, at 2,300 ft. in Rocky Mtn region.	21, 23, 25-2
Hoary willow (<i>Salix candida</i>)		X	X		X					✓			Fens, bogs, marshes, areas of permanently saturated soils.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Idaho sedge (<i>Carex idahoensis</i>)		X			X			✓		✓			Ecotone b/t wet meadow and sagebrush steppe, moist, alkaline streamside meadow habitat.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association							General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed			
Large-flower triteleia (<i>Triteleia grandiflora</i>)			X		X	✓		✓	✓				Grasslands or sagebrush and pinyon-juniper woodlands to pine forest slopes and hills.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
¹X = sensitive ²T= threatened, E = endangered, EXP = experimental, C = candidate														
Lemhi beardtongue (<i>Penstemon lemhiensis</i>)		X	X	X	X	✓		✓	✓			✓	Rock outcrops, big sagebrush and bunchgrasses, open soils, openings in lodgepole pine.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Lemhi milkvetch (<i>Astragalus aquilonius</i>)		X			X		✓						Shrub steppe, unstable soils, shale or clay washes, steep eroded canyon.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Lichen (<i>Catapyrenium congestum</i>)		X			X			✓					sagebrush or shadscale steppe; restricted to barren, slightly natric soil sites	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Lost River milkvetch (<i>Astragalus amnis- amnis</i>)		X			X							✓	Limestone rock, stable talus at bases of cliffs.	21, 23, 25-2
Maguire's primrose (<i>Primula maguirei</i>)			X		X					✓		✓	Logan Canyon, Utah, damp ledges, crevices, and overhanging rocks, moss covered limestone at or near canyon bottom.	20, 21, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Manyhead bladderpod (<i>Lesquerella multiceps</i>)			X		X				✓	✓			Rock outcrops, talus, and dry rocky soils on open ridges and slopes or in woodland openings	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Marsh (false) felwort (<i>Lomatogonium rotatum</i>)		X		X	X					✓			Alkaline meadows and fens in montane zone.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Moss rush (<i>Juncus bryoides</i>)			X		X					✓			Wet, mesic, moist areas.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Mourning milkvetch (<i>Astragalus atratus var. insepitus</i>)		X			X	✓							Range improvements and grazing are threats.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
¹ X = sensitive ² T= threatened, E = endangered, EXP = experimental, C = candidate													
Obscure phacelia (<i>Phacelia inconspicua</i>)		X			X		✓			✓		In Idaho, b/w 5,300 and 6,200 ft., steep north to east facing, lower to mid-slope, lying below rimrock of butte tops or foothill ridgetops, toe-slopes immediately above ephemeral moist drainages.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Pale sedge (<i>Carex livida</i>)		X			X					✓		Wet organic soils.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Picabo milkvetch (<i>Astragalus oniciformis</i>)		X			X			✓				Sandy sites – basins, bowls, almost exclusively within sagebrush.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Pink agoseris (<i>Agoseris lackschewitzii</i>)		X		X	X					✓		Subalpine wet meadows where soil is saturated	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Plains milkvetch (<i>Astragalus gilviflorus</i>)		X			X						✓	Open, sparsely vegetated rocky, gentle to steeper limestone slopes.	21, 23, 25-2
Red glasswort (<i>Salicornia rubra</i>)		X	X		X					✓		Saline wet mesic sites, alkaline.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Rydberg's musineon (<i>Musineon lineare</i>)			X		X						✓	Rock outcrops.	21, 23, 25-2
Sepal-tooth dodder (<i>Cuscuta denticulate</i>)		X			X			✓				Occurs on various shrubs w/in desert areas (<i>Artemisia</i> and <i>Chrysothamnus</i>).	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Slender moonwort (<i>Botrychium lineare</i>)			X		X	✓			✓		✓	Grasslands, woodland trails, along roadways in gravelly shoulders created during road construction.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Slick-spot pepper- grass (<i>Lepidium papilliferum</i>)			X		X			✓				Small openings in sagebrush steppe, high clay and sodium soils.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association							General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed			
Small-flowered ricegrass (<i>Piptatherum micranthum</i>)		X			X	✓							Med to coarse textured soils, open.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Snake River milkvetch (<i>Astragalus purshii</i> var. <i>ophiogenes</i>)		X			X					✓	✓		Barren sites with big sagebrush, Indian ricegrass, needle-and- thread grass and four-wing satlbush. Growing in loosely aggregated, frequently moving sand and gravelly sand deposits on bluffs, talus, dunes and volcanic ash beds, from 700- 1075 m. elevation	20, 21, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Spreading gilia (<i>Ipomopsis polycladon</i>)		X			X		✓	✓			✓		Dry, open areas in desert shrub communities, rocky slopes in Eastern Idaho, silt, sand, and clay soils.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
St. Anthony evening primrose (<i>Oenothera psammophila</i>)		X			X						✓		Sand dunes, trailing margins of migrating sand dunes, and sand- filled cracks over basalt outcrops.	21, 23, 25-2
Starveling milkvetch (<i>Astragalus jejunus</i> var. <i>jejunus</i>)			X		X						✓		Dry, barren ridges, sparsely vegetated bright outcrops.	21, 23, 25-2
Swamp willow- weed (<i>Epilobium palustre</i>)		X			X					✓			Swamps and marshes.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Tall dropseed (<i>Sporobolus asper</i>)		X			X	✓		✓					Sagebrush and tallgrass prairie communities.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Tufted Cryptantha (<i>Cryptantha caespitosa</i>)			X		X	✓			✓		✓		Rocky or chalky. ridgetops, forb- grass, pinyon- juniper, spruce fir forests.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31

¹X = sensitive ²T = threatened, E = endangered, EXP = experimental, C = candidate

Table 4.1-4 Idaho Special Status Plant Species

Common Name (Scientific Name)	Status ¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Two-grooved milkvetch (<i>Astragalus bisulcatus</i> var. <i>bisulcatus</i>)		X			X	✓						Alluvial clay soils of bottomlands, plains, prairies.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25- 3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Uinta Basin Cryptantha (<i>Cryptantha breviflora</i>)			X		X							Mostly heavy clay soils, poor substrates of eroding knolls and badland slopes and dry, open places, variously on barren clay or in sandy soil, loose and eroding shale	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	T	X	X		X						✓	Meandered wetlands and swales in broad open valleys.	20, 22, 23, 25- 11, 25-12, 25-2, 25-3, 25-4
Wasatch rock-cress (<i>Arabis lasiocarpa</i>)			X		X						✓	Lower montane t subalpine rock crevices, rock, and gravelly soils.	21, 23, 25-2
Western sedge (<i>Carex occidentalis</i>)			X		X				✓			Dry habitats in montane, spruce- fir alpine and subalpine.	23
White spruce (<i>Picea glauca</i>)		X			X				✓			Wooded, well- aerated water, yet the species will tolerate a wide range of moisture conditions	23
Winged-seed evening primrose (<i>Camissonia pterosperma</i>)		X			X			✓				Dry, open slopes, ridges, and washes in sagebrush, gravelly, silty soils.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31

¹X = sensitive ²T= threatened, E = endangered, EXP = experimental, C = candidate

4.1.7 NOXIOUS WEEDS

Noxious weeds in Montana are defined as any established or introduced exotic plant species, which may render the land unfit for agriculture, forestry, livestock, wildlife, or other beneficial, uses or that may harm native plant communities (MCA §7-22-2101 to 2153) and similarly as are plant species that have been designated "noxious" by law or deleterious in Idaho (Callihan and Miller 1999). Noxious weeds are managed at the county level in both states. Federal lands managed by the BLM and USFS are managed under the agencies respective Resource Management Plan and Forest Plan. There are approximately 2,000 weed species identified in the U.S. (Callihan and Miller 1999).

Montana designates 31 weed species as the highest priority for management (Montana Weed Management Plan 2005). Idaho designates 35 weed species as the highest priority for management (recently updated from 31 species, Callihan and Miller 1999). Of the designated weed species designated for management in Montana and Idaho, seven species are common to both states. A summary of noxious weed species potentially occurring along the alternative route links is summarized in Table 4.1-5 below. Noxious weed distributions are known to the level of county and/or federal jurisdictional boundary.

Table 4.1-5 Noxious Weed Occurrence According to Montana and Idaho County Association Pertaining to the MSTI Project

Common Name	Scientific Name	County	Link Association
Absinth wormweed	<i>Artemisia absinthium</i>	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1
Babysbreath	<i>Gypsophila paniculata</i>	Deer Lodge	2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-4, 8
Black henbane	<i>Hyoscyamus niger</i>	Beaverhead, Broadwater, Jefferson, Blaine, Clark, Butte, Bonneville, Power, Bingham	1, 8, 13, 16, 2-1, 2-2, 2-3, 3-1, 4-1, 11-3, 11-4, 11-22, 18-1, 20, 21, 22, 23, 24, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 26-1, 26-2, 26-3
Buffalobur	<i>Solanum rostratum</i>	Clark, Lincoln, Jerome	18-2, 20, 21, 22, 23, 27, 25-2, 25-3, 25-4, 26-4
Burdock	<i>Arctium minus</i>	Beaverhead, Broadwater	1, 8, 13, 16, 2-1, 2-2, 2-3, 3-1, 4-1, 11-3, 11-4, 11-22, 18-1
Canada Thistle	<i>Cirsium arvense</i>	All MSTI Idaho Counties	20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Common mullein	<i>Verbascum thapsus</i>	Beaverhead, Deerlodge	8, 13, 16, 4-2, 7-6, 7-7, 7-9, 11-3, 11-4, 11-21, 11-22, 18-1
Common teasel	<i>Dipsacus fullonum</i>	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1
Curley dock	<i>Rumex crispus</i>	Deerlodge	2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-4, 8
Dalmatian toadflax	<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>)	Clark, Blaine, Bingham, Bonneville	20, 21, 22, 23, 24, 29, 30, 31, 18-2, 25-12, 25-2, 25-3, 26-1, 26-2, 26-3
Diffuse Knapweed	<i>Centaurea diffusa</i>	All MSTI Idaho-	20, 21, 22, 23, 24, 27,

Table 4.1-5 Noxious Weed Occurrence According to Montana and Idaho County Association Pertaining to the MSTI Project

Common Name	Scientific Name	County	Link Association
		Counties	28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Dyer's woad	<i>Isatis tinctoria</i>	Clark, Blaine, Bingham, Bonneville, Lincoln, Minidoka	20, 21, 22, 23, 24, 29, 30, 31, 18-2, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Field bindweed	<i>Convolvulus arvensis</i>	All Idaho Counties	20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Field scabious	<i>Knautia arvensis</i>	Beaverhead, Madison	8, 11-22, 11-3, 11-4, 13, 16, 18-1
Hoary cress	<i>Cardaria draba</i>	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Houndstongue	<i>Cynoglossum officinale</i>	All MSTI Montana Counties	1, 2-1, 2-3, 3-1, 4-1, 4-2, 4-4, 7-2, 7-41, 7-42, 7-5, 7-61, 7-62, 7-72, 7-8, 7-9, 8, 11-21, 11-22, 11-23, 11-3, 11-4, 13, 16-1, 16-2, 16-3, 16-4, 18-1
Johnson grass	<i>Sorghum halpense</i>	Bingham, Bonneville	21, 24, 26-1, 26-2, 30
Jointed goatgrass	<i>Aegilops cylindrica</i>	Clark, Bingham, Bonneville	20, 21, 22, 23, 24, 30, 18-2, 26-1, 26-2
Kochia	<i>Kochia scoparia</i>	Deerlodge	2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-4, 8
Leafy spurge	<i>Euphorbia esula</i>	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Meadow knapweed	<i>Centaurea pratensis</i>	Clark	18-2, 20, 21, 22, 23
Meadow salsify	<i>Tragopogon pratensis</i>	Silverbow	4-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 8, 11-21, 11-22
Millum	<i>Milium vernale</i>	Clark	18-2, 20, 21, 22, 23
Musk thistle	<i>Cardus nutans</i>	Broadwater,	1, 8, 2-1, 2-2, 2-3, 3-1,

Table 4.1-5 Noxious Weed Occurrence According to Montana and Idaho County Association Pertaining to the MSTI Project

Common Name	Scientific Name	County	Link Association
Oxeye daisy	<i>Leucanthemum vulgare</i>	Deerlodge, Madison, Clark Beaverhead, Madison, Deerlodge, Broadwater,	4-1, 4-2, 7-6, 7-7, 7-9, 11-21 1, 8, 2-1, 2-3, 3-1, 4-1, 4-2, 7-72, 7-9, 8, 11-3, 11-4, 11-21, 11-22, 11-23, 13, 16-1, 16-2, 16-3, 16-4, 18-1
Perennial pepperweed	<i>Lepidium latifolium</i>	Jerome, Minidoka, Bingham, Clark, Jefferson	20, 21, 22, 23, 24, 27, 30, 31, 18-2, 25-4, 26-1, 26-2, 26-3, 26-4
Perennial sowthistle	<i>Sonchus oleraceus</i>	Broadwater, Deerlodge, Blaine, Lincoln, Jerome, Bonneville, Bingham	1, 2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 7-6, 7-7, 7-9, 11-21 21, 24, 27, 29, 30, 31, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Poison hemlock	<i>Conium maculatum</i>	Broadwater, All MSTI Idaho-Counties	1, 2-1, 2-2, 2-3, 3-1, 4-1 20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Puncturevine	<i>Tribulus terrestris</i>	Silverbow, All MSTI Idaho-Counties	4-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 8, 11-21, 11-22 20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Purple loosestrife	<i>Lythrum salicaria</i>	Blaine, Lincoln, Minidoka	29, 30, 31, 25-12, 25-2, 25-3, 25-4, 26-3, 26-4
Rush Skeletonweed	<i>Chondrilla juncea</i>	Blaine	25-12, 25-2, 25-3, 26-3, 29, 30, 31
Russian knapweed	<i>Acroptilon repens</i>	Blaine, Bonneville, Bingham, Minidoka, Jerome, Lincoln, Butte	21, 23, 24, 27, 29, 30, 31, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Scentless chamomile	<i>Matricaria inodora</i>	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1
Scotch thistle	<i>Onopordum acanthium</i>	Blaine, Bonneville, Bingham, Minidoka,	21, 23, 24, 27, 29, 30, 31, 25-11, 25-12, 25-2,

Table 4.1-5 Noxious Weed Occurrence According to Montana and Idaho County Association Pertaining to the MSTI Project

Common Name	Scientific Name	County	Link Association
Silverleaf Nightshade	<i>Solanum elaeagnifolium</i>	Jerome, Lincoln, Butte	25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Skeletonleaf bursage	<i>Ambrosia tomentosa</i>	Minidoka	26-3, 26-4, 31
Spotted knapweed	<i>Centaurea maculosa</i>	Blaine, Jerome	27, 29, 30, 31, 25-12, 25-2, 25-3, 25-4, 26-3, 26-4
Sulfur cinquefoil	<i>Potentilla recta</i>	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4
Swainsonpea	<i>Sphaerophysa salaula</i>	Beaverhead, Jefferson, Madison	2-3, 3-1, 4-1, 4-2, 4-4, 7-2, 7-41, 7-42, 8, 11-23, 11-3, 11-4, 13, 16-1, 16-2, 16-3, 16-4, 18-1
Syrian Beancaper	<i>Zygophyllum fabago</i>	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1
Whitetop	<i>Cardaria draba</i>	Minidoka, Bingham	26-3, 26-4, 21, 24, 26-1, 26-2, 26-3, 26-4, 30, 31
Wild licorice	<i>Centaurea pratensis</i>	All MSTI Idaho & Montana Counties	All
Yellow starthistle	<i>Centaurea solstitialis</i>	Broadwater	1, 2-1, 2-2, 2-3, 3-1, 4-1
Yellow toadflax	<i>Linaria vulgaris</i>	Blaine	25-12, 25-3, 26-3, 30, 31
		Blaine, Butte, Bingham, Bonneville,	21, 23, 24, 29, 30, 31, 25-11, 25-12, 25-2, 25-3, 26-1, 26-2, 26-3

4.2 GENERAL WILDLIFE

The vegetative communities associated with the proposed transmission line links support a diversity of wildlife species. This report is focused on habitat associations for wildlife species. Wildlife species that occupy the 7 general habitat classifications and are fairly common in the vicinity of the alternative route links are included below. A link-by-link account of wildlife is included after Section 4.3.2 and displayed in Volume IV (Maps).

A number of special status animal species are known to occur or have the potential to occur in the vicinity of the alternative route links. These include federally listed species under ESA as well species designated as sensitive by the BLM, and USFS. There are five species listed under ESA, 74 BLM

sensitive species, and 16 USFS Sensitive species in Montana. In Idaho there are 11 species listed under ESA, 14 BLM sensitive species, and three USFS sensitive species. State sensitive species include those species designated as Tier 1 species in Montana or are protected non-game species in Idaho. In Montana there are 84 Tier 1 sensitive species and Idaho has 73 protected non-game species. Federally designated special status species are listed in Tables 4.2-1 and 4.2-2 below with habitat and link associates. State designated special status species are included in Appendix B. There is no critical habitat designated along any of the alternative route links.

4.2.1 WILDLIFE HABITAT

4.2.1.1 Wildlife of Conifer and Broadleaf Forest Habitat

Passerines (perching birds) of forest habitat like to occur include American robin (*Turdus migratorius*), dark-eyed junco (*Junco hyemalis*), hermit thrush (*Catharus guttatus*), mountain chickadee (*Parus gambeli*), pine grosbeak (*Pinicola enucleator*), pine siskin (*Carduelis pinus*), ruby-crowned kinglet (*Regulus calendula*), red-breasted nuthatch (*Sitta canadensis*), Stellar's jay (*Cyanocitta stelleri*), and yellow-rumped warbler (*Dendroica coronata*) (USFS 2001). Wild turkey (*Meleagris gallopavo*), mourning doves, spruce, blue, and ruffed grouse (*Falci pennis canadensis*, *Dendragapus obscurus*, and *Bonasa umbellus* respectively), and gray partridge (*Perdix perdix*) are gamebirds found along the MSTI alternative route links in this habitat type. Other avian species likely to be found include the hairy woodpecker, downy woodpecker, and Williamson's sapsucker (*Sphyrapicus thyroideus*). Common birds of prey likely found in forest habitats along the MSTI alternative route links include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), and the great horned owl (*Bubo virginianus*) (USFS 2001). Additional avian information is included in Appendix E.

A variety of mammal species typify habitats in conifer and broadleaf communities of southwestern Montana. Small and medium-sized mammals (lagomorphs and rodents) that are likely to be found in forest habitats within the project area include mountain cottontail (*Sylvilagus natalii*), deer mouse (*Peromyscus maniculatus*), long-tailed vole (*Microtus longicaudus*), southern red-backed vole (*Clethrionomys gapperi*), least chipmunk (*Tamias minimus*), yellow pine chipmunk (*T. amoenus*), red squirrel (*Tamiasciurus hudsonicus*), Northern flying squirrel (*Glaucomys sabrinus*), Columbian ground squirrel (*Spermophilus columbianus*), Golden-mantled ground squirrel (*S. lateralis*), bushy-tailed woodrat (*Neotoma cinerea*), and porcupine (*Erethizon dorsatum*) (Foresman 2001; MTFWP 2008). Carnivores that may occur in coniferous forest habitat along the MSTI alternative route links include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), long-tailed weasel (*Mustela frenata*), wolverine (*Gulo gulo*), grizzly and black bear (*Ursus arctos* and *U. americana*), cougar (*Puma concolor*), and bobcat (*Lynx rufus*) (Foresman 2001; MTFWP 2008). Wildlife movement corridors facilitate travel between disconnected habitats are summarized in Volume I, Chapter 3, Section 3.2 (Table 3.2-7). Conifer forest provides large game winter habitat along the MSTI alternative route links. Important ungulate (hoofed animal) species include moose (*Alces alces*), elk (*Cervus canadensis*) and mule deer (*Odocoileus hemionus*).

Typical bat species of forest habitats include silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), little brown bat (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Townsend's big-eared bat (*Corynorhinus townsendii*) and spotted bat (*Euderma maculatum*) (Foresman 2001).

Amphibians and reptiles documented in with the potential to occur in forest habitats along the MSTI alternative route links include western toad (*Bufo boreas*) and western rattlesnake (*Crotalis viridis*) (MTFWP 2008).

4.2.1.2 Wildlife of Grassland Habitat

Common passerine bird species inhabiting grasslands include the common raven (*Corvus corax*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), western kingbird (*Tyrannus verticalis*), lark bunting (*Calamospiza melanocorys*), savannah sparrow (*Passerculus sandwichensis*), and vesper sparrow (*Pooecetes gramineus*) (TBNA 2005). Birds of prey include the golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), prairie falcon (*Falco mexicanus*), American kestrel (*Falco sparverius*), great horned owl, and burrowing owl (*Athene cunicularia*). Sharp-tailed grouse (*Tympanuchus phasianellus*), chukar (*Alectoris chukar*), and gray partridge (*Perdix perdix*) are the most likely upland gamebirds found along the alternative route links associated grassland habitat. Open grassland species may include mourning dove (*Zenaida macroura*), common poorwill (*Phalaenoptilus nuttallii*), broad-tailed hummingbird (*Selasphorus platycercus*), and black-chinned hummingbird (*Archilochus alexandri*). Waterfowl, waterbird, and shorebird use of grasslands is limited along the alternative route links. Additional avian information is included in Appendix E.

A variety of mammal species typify habitats in grassland communities of southwestern Montana. Grassland lagomorphs and small mammals likely include black-tailed jackrabbit (*Lepus californicus*), white-tailed jackrabbit (*L. californicus*), black-tailed prairie dog (*Cynomys ludovicianus*), northern pocket gopher (*Thomomys talpoides*), deer mouse, Great Basin pocket mouse (*Paragnathus parvus*), northern grasshopper mouse (*Onychomys leucogaster*), montane vole (*Microtus montanus*), and long-tailed vole (Foresman 2001; MTFWP 2008). Common grassland carnivores include coyote (*Canis latrans*), long-tailed weasel, badger (*Taxidea taxus*), and striped skunk (*Mephitis mephitis*) (Foresman 2001; MTFWP 2008).

Elk, whitetail (*Odocoileus virginiana*) and mule deer, and (*Antilocapra americana*) are the primary game species which occur in open grassland habitats (MTFWP 2008). Ideal elk habitat contains forested areas interspersed with meadows. However, open grasslands at low elevations may be used during winter (agency defined winter range and critical habitat are included in the inventories listed below). Open grasslands, particularly with scattered shrubs, are used to some degree during winter. Populations for both may vary seasonally and with severity of winter conditions that influence migration movement from elevation to lower elevations. A summary of big game winter and elk summer habitat crossed by the proposed Alternative routes can be found in Volume I, Chapter 3, Section 3.2 (Tables 3.2-8 and 3.2-9). Wildlife movement corridor data is summarized in Volume I, Chapter 3, Section 3.2 (Table 3.2-7). Grassy habitats in proximity to high relief rocky and sparse habitat may provide forage for bighorn sheep (*Ovis canadensis*)

Bat species are highly mobile and may range great distances between day roost habitat and high quality feeding habitat. Bat species that may use grassland habitats include fringed myotis and small-footed myotis (*Myotis ciliolabrum*) (Foresman 2001).

Amphibians and reptiles that may occur in grasslands include western toad (*Bufo boreas*), short-horned lizard (*Phrynosoma douglassii*), western fence lizard (*Sceloporus occidentalis*), racer (*Coluber constrictor*), and western terrestrial garter snake (*Thamnophis elegans*) (MTFWP 2008).

4.2.1.3 Wildlife of Riparian, Wetland, and Water Habitat

Birds found in riparian areas include black-billed magpie (*Pica pica*), Brewer's blackbird (*Euphagus cyanocephalus*), Bullock's oriole (*Icterus bullockii*), rufous hummingbird (*Selasphorus rufus*), calliope hummingbird (*Stellula calliope*) and American goldfinch (*Carduelis tristis*), snadhill crane, heron species, and waterfowl (TBNA 2005). Tree cavities in riparian forested habitat in riparian areas may attract species such as American kestrel, black-capped chickadee (*Parus atricapillus*), European starling (*Sturnus vulgaris*), and house wren (*Troglodytes aedon*). Water bird species likely found in this habitat type include common and Barrow's goldeneye (*Bucephala clangula* and *B. islandica* respectively), northern pintail (*Anas acuta*), canvasback (*Aythya valisineria*), common merganser (*Mergus merganser*), sandhill crane (*Grus canadensis*), great blue heron (*Ardea herodias*), and American bittern (*Botaurus lentiginosus*), spotted sandpiper (*Actitis macularia*), and killdeer (*Charadrius vociferus*). A summary of waterfowl production areas (WPA) crossed (or near) by the proposed Alternative routes is included in Volume I, Chapter 3, Section 3.2 (Table 3.2-10). Additional avian information is included in Appendix E.

A variety of mammal species typify habitats in riparian and wetland communities of southwestern Montana. Small mammals (insectivores, rodents) potentially found in riparian areas include shrews (*Sorex* spp.), western jumping mouse (*Zapus princeps*), meadow vole (*Microtus pennsylvanicus*), long-tailed vole, muskrat (*Ondatra zibethicus*). Carnivores include mink (*Mustela vison*) and river otter (*Lontra canadensis*). Elk prefer riparian areas or other shaded habitat with green forage and access to water during summer. Moose (*Alces alces*) may be year-round residents of these areas.

Numerous bat species forage over riparian areas or open water, but due to the lack of perennial water and associated riparian habitat, these species may depend partially on artificial water sources such as livestock tanks. Bat species that utilize riparian habitat may include all species occurring in the region. The specific assemblage of bats forming local communities will vary with the proximity and type of roost habitat.

Amphibians and reptiles that potentially occur in riparian habitat include painted turtle (*Chrysemys picta*), western chorus frog (*Pseudacris triseriata*), spotted frog (*Rana luteiventris*), and garter snakes (*Thamnophis* spp.) (MTFWP 2008). Additionally, there are historic but no recent records of northern leopard frog (*Rana pipiens*) in the project area.

Fisheries primarily include cold water species in lotic systems. The major rivers in Montana that are in the vicinity of the MSTI project are: the Beaverhead, Big Hole, Boulder, Gallatin, Jefferson, Red Rock, Madison, and Missouri. The major lakes and reservoirs in Montana are the Whitetail Reservoir, Willow Creek Reservoir, Delmoe Lake, Ennis Lake, Harrison Lake, Ruby Lake Reservoir, Clark Canyon Reservoir, Lima Reservoir, and Red Rock Lakes. Lake and reservoirs primarily support coldwater and game fish species. There are only three class 1 fisheries that are crossed by the MSTI Alternatives and occur among the waterways (lotic and lentic) listed above, they include: the Missouri, Big hole, and Beaverhead Rivers. Fish species that occupy waters in the vicinity of the alternative route links include: brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), common carp (*Cyprinus carpio*) shorthead redhorse (*Moxostoma valenciennesi*), fathead minnow (*Pimephales promelas*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreus*), and northern pike (*Esox lucius*).

4.2.1.4 Wildlife of Shrubland Habitat

Common passerine bird species inhabiting shrublands include green-tailed towhee (*Pipilo chlorurus*), black-headed grosbeak (*Pheucticus melanocephalus*), blue-gray gnatcatcher (*Polioptila caerulea*), MacGillivray's warbler (*Oporornis tolmiei*), and lazuli bunting (*Passerina ciris*) (BBS 2007). Common birds of prey of shrublands are red-tailed hawk, Cooper's hawk (*Accipiter cooperii*), common nighthawk (*Chordeiles minor*), great horned owl, northern saw-whet owl (*Aegolius acadicus*), and sharp-shinned hawk (*Accipiter striatus*). Other shrubland inhabitants may include mourning dove, broad-tailed hummingbird, northern flicker (*Colaptes auratus*), and ladder-backed woodpecker (*Picoides scalaris*) (BBS 2007). Additional avian information is included in Appendix E.

A variety of mammal species typify habitats in shrubland communities of southwestern Montana. Small and medium-sized mammals (insectivores, lagomorphs, rodents) that may occur in shrublands include Merriam's shrew (*Sorex merriami*), mountain cottontail, black-tailed jackrabbit, white-tailed jackrabbit, deer mouse, Great Basin pocket mouse, Montane vole, northern pocket gopher, least chipmunk, golden-mantled ground squirrel, and woodrat (Foresman 2001; MTFWP 2008).

Because of the array of small and medium sized mammalian prey and abundant cover, shrub communities typically support higher densities of carnivore species. Among them are coyote, red fox, cougar, and bobcat (Foresman 2001; MTFWP 2008).

Shrublands are utilized by a variety of big game species including elk and mule deer. Elk use of shrublands increases during winter due to their increased dependence on browse (MTFWP 2008). Bighorn sheep may occur, as described previously.

Bat species that may use shrub-dominated habitats include fringed myotis, small-footed myotis (*Myotis ciliolabrum*), long-eared myotis, Townsend's big-eared bat and spotted bat (Foresman 2001).

Amphibians and reptiles that potentially occur in shrublands include Woodhouse's toad (*Bufo woodhousii*), gopher snake (*Pituophis catenifer*), western rattlesnake (*Crotalus viridis*), and western fence lizard (MTFWP 2008).

4.2.1.5 Wildlife of Sagebrush Habitat

In Montana's sagebrush dominated communities, birds are similar to those in mixed shrublands described in the previous section. Species include Swainson's hawk (*Buteo swainsoni*), golden eagle (*Aquila chrysaetos*), sage grouse (*Centrocercus urophasianus*), Brewer's sparrow (*Spizella breweri*), sage sparrows (*Amphispiza belli*), and sage thrasher (*Oreoscoptes montanus*). Additional avian information is included in Appendix E.

A variety of mammal species typify habitats in sagebrush dominated communities of southwestern Montana. General mammal species are similar to those described above for mixed shrub communities. Sagebrush is utilized by a variety of game species including elk, mule deer, and . Sagebrush is used by mule deer for critical winter habitat and is being impacted by all grazing species (elk, deer) and during drought situations (agency defined big game winter range, critical habitat, and movement corridors are included in Volume I, Chapter 3, Section 3.2 (Tables 3.2-7, 3.2-8, and 3.2-9). Sagebrush habitat is critical for sagebrush obligate mammal species such as the pygmy rabbit (*Brachylagus idahoensis*) and sagebrush vole (*Lemmys curtatus*).

Amphibians and reptiles that potentially occur in sagebrush include western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis melanoleucus*), short-horned Lizard (*Phrynosoma douglassi*)

sagebrush lizard (*Sceloporus graciosus*), Pacific tree frog, boreal toad, western toad, and long-toed salamander (MTFWP 2008).

4.2.1.6 Wildlife of Sparse Vegetation Habitat

Wildlife species that utilize sparse vegetation habitat is generally similar to that described above for grassland and shrublands habitat. A major difference in species would be that this habitat is more typically utilized by generalist (species capable of utilizing a variety habitat types). This habitat would in most cases be considered marginal quality for most obligate species. Certain reptile and raptor species may reside in sparse vegetation habitat, exploiting habitat qualities not desirable by most species such as areas of lava vegetation on Craters of the Moon National Monument. Avian species that occupy such habitat include: mountain bluebird (*Sialia currucoides*), violet-green swallow (*Tachycineta thalassina*), rock wren (*Salpinctes obsoletus*), raven, gray crowned rosy-finch (*Leucosticte tephrocotis*), rough-legged hawk (*Buteo lagopus*), and northern shrike (*Lanius excubitor*). At rocky high elevation sparse sites pika (*Ochotona princeps*) may find habitat. Bighorn sheep may also occur at high elevation rocky sides and surrounding habitats. Reptiles typical of sparse sites include: western fence lizard and western skink (*Eumeces skiltonianus*).

Table 4.2-1 Special Status Animal Species of Montana that May Occur in the Study Area

Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
BIRDS												
American Peregrine Falcon <i>Falco peregrinus anatum</i>		X	X	✓							✓	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Black-backed woodpecker <i>Picoides arcticus</i>		X	X	✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Flammulated Owl <i>Otus flammeolus</i>		X	X	✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Greater Sage-Grouse <i>Centrocercus urophasianus</i>		X	X	✓	✓			✓		✓		2-1, 3-1, 4-1, 4-2, 4-3, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-8, 11-21, 11-4, 16
Harlequin Duck <i>Histrionicus histrionicus</i>		X	X	✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Northern Goshawk <i>Accipiter gentilis</i>		X	X	✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1

Table 4.2-1 Special Status Animal Species of Montana that May Occur in the Study Area

Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Trumpeter Swan <i>Cygnus buccinator</i>		X	X	✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Black tern <i>Chilodoniass niger</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Blue-gray gnatcatcher <i>Polioptila caerulea</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Common loon <i>Gavia immer</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Dickcissel <i>Spiza Americana</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Ferruginous hawk <i>Buteo regalis</i>		X		✓		✓	✓	✓				1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Franklin's gull <i>Larus pipixcan</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Golden eagle <i>Aquila chrysaetos</i>		X		✓		✓	✓					1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Great gray owl <i>Strix nubulosa</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2,4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Loggerhead shrike <i>Lanius ludovicianus</i>		X		✓			✓					2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 11-21, 11-22, 11-3, 11-4, 16, 18-1

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Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Long-billed curlew <i>Numenius americanus</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Chestnut-collared longspur <i>Calcarius ornatus</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
McCown's longspur <i>Calcarius mccownii</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Marbled godwit <i>Limosa fedoa</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Mountain plover <i>Charadrius montanus</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Sage thrasher <i>Oreoscoptes montanus</i>		X		✓				✓				2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Baird's sparrow <i>Ammodramus bairdii</i>		X		✓		✓	✓					1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Brewer's sparrow <i>Spizella breweri</i>		X		✓		✓	✓					1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
LeConte's sparrow <i>Ammodramus leconteii</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Nelson's sharp-tailed sparrow <i>Ammodramus nelsoni</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

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Table 4.2-1 Special Status Animal Species of Montana that May Occur in the Study Area

Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Sage sparrow <i>Amphispiza belli</i>		X		✓			✓	✓				2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Sedge wren <i>Cistothorus platensis</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Sprague's pipit <i>Anthus spragueii</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Swainson's hawk <i>Buteo swainsonii</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
White-faced ibis <i>Plegadis chihi</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Willet <i>Cataptrophorus semipalmatus</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Wilson's phalarope <i>Phalaropus tricolor</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Three-toed woodpecker <i>Picoides tridactylus</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Red-headed woodpecker <i>Melanerpes erythrocephalus</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Yellow rail <i>Coturnicops noveboracensis</i>		X		✓						✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1

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Table 4.2-1 Special Status Animal Species of Montana that May Occur in the Study Area

Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
MAMMALS												
Townsend's Big-Eared Bat <i>Corynorhinus townsendii</i>		X	X	✓							✓	7-2, 7-5, 7-6, 7-7, 7-9, 16, 18-1
Spotted bat <i>Euderma maculatum</i>		X		✓				✓			✓	2-1, 3-1, 4-1, 4-2, 4-3, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-8, 11-21, 11-4, 16
Fringe-tailed myotis <i>Myotis thysanodes pahasapensis</i>		X		✓			✓				✓	2-1, 2-2, 2-3, 4-1, 4-2, 4-3, 7-1, 7-2, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Fringed myotis <i>Myotis thysanodes</i>		X		✓			✓		✓	✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Long-legged myotis <i>Myotis volans</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Long-eared myotis <i>Myotis evotis</i>		X		✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Northern myotis <i>Myotis septentrionalis</i>		X		✓					✓		✓	2-1, 3-1, 4-1, 4-2, 4-3, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-8, 11-21, 11-4, 16
Pallid bat <i>Antrozous pallidus</i>		X		✓				✓				2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
White-tailed prairie dog <i>Cynomys leucurus</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Black-footed ferret <i>Mustela nigripes</i>	E	X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Swift fox <i>Vulpes velox</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1

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Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Western spotted skunk <i>Spilogale gracilis</i>		X		✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Fisher <i>Martes pennanti</i>		X	X	✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Canada Lynx <i>Lynx Canadensis</i>	T			✓	✓				✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Gray Wolf <i>Canis lupus</i>	EXP	X		✓	✓				✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Grizzly Bear <i>Ursus arctos horribilis</i>	T			✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Great Basin Pocket Mouse <i>Perognathus parvus</i>		X	X	✓		✓						1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
North American Wolverine <i>Gulo gulo luscus</i>		X	X	✓					✓			1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1
Northern Bog Lemming <i>Synaptomys borealis</i>			X	✓					✓	✓		1, 2-1, 2-2, 2-3, 3-1, 4-2, 4-3, 7-1, 7-2, 7-3, 7-41, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 13, 16, 18-1
Pygmy Rabbit (<i>Brachylagus idahoensis</i>)		X	X	✓	✓			✓				1, 2-1, 2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-41, 7-42, 7-43, 7-5, 7-6, 7-7, 7-8, 7-9, 8, 11-21, 11-22, 11-3, 11-4, 16, 18-1

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4.2.2 MONTANA WILDLIFE

Link 1

Link 1 is dominated by grassland and secondarily riparian shrub habitats. Riparian tree and shrub habitat is associated with the Missouri River crossing near MP 1. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Known heron rockeries, bald eagle nests, and northern leopard frog occurrence is present near the Missouri River and along the majority of the link. There is approximately 1.7 miles of high waterfowl use area along Link 1 primarily in the vicinity of the Missouri River crossing between MPs 0-2. Plains spadefoot toad occurrence is present near MPs 4-5.

Link 2-1

Link 2-1 is dominated by grassland and secondarily mixed shrub habitats. Riparian tree and shrub habitat is associated with the Missouri River crossing near MP 9. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Known heron rockeries, bald eagle nests, and northern leopard frog occurrence is present along the first mile of Link 2-1 near the Missouri River. Additional heron rockeries are located near MPs 5-7 and 26. Additional bald eagle nests are located near MPs 5-7, 17-19, and 26. Long-billed curlew occurrence is known near MP 26. There is approximately 0.3 miles of high waterfowl use area along Link 1 primarily in the vicinity of the Missouri River crossing between MPs 8.6-9.2. Link 2-1 6.7 and 0.5 miles of winter range habitat (lower elevation grass and shrub habitat) for elk and mule deer respectively.

Link 2-3

Link 2-3 is dominated by grassland and secondarily mixed shrub habitats. Riparian tree and shrub habitat is associated with the Boulder River crossing near MP 9.7. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Known heron rockeries are present along the first mile and near MP 20. Long-billed curlew occurrence is present near MP 1. Bald eagle presence occurs near MP 3. Western spotted skunk is known near MP 6. Fringe myotis, Townsend's big-eared bat, and western toad occurrence is known near MPs 15-17. A small amount (0.2 miles) of elk winter range (lower elevation grass and shrub habitat) occurs along Link 2-3. Link 2-3 crosses 1.5 miles of the Tobacco Roots to Boulder wildlife movement corridor near mile post 19 to the link terminus.

Link 3-1

Link 3-1 is dominated by grassland and secondarily mixed conifer habitats. Riparian tree and shrub habitat is associated with the Boulder River crossing near MP 30. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Known occurrences of Brewer's sparrow is present around MPs 7, and 14-15. McCowen's longspur is known near MPs 7-9, and a heron rockery exists near MPs 30-31. Link 3-1 crosses 3.8 and 19.8 miles of winter range habitat (lower elevation grass and shrub habitat) for elk and mule deer respectively. This is the third highest amount of mule deer winter range along the alternative route links in Montana. Link 3-1 crosses 1.7 miles of the Tobacco Roots to Boulder wildlife movement corridor near MPs 30.5 to the link terminus.

Link 3-2

Link 3-2 is dominated by grassland. Wildlife associated with this community (see Section 4.3.1) would be prominent along this link.

Link 4-1

Link 4-1 is dominated by low sagebrush and secondarily grassland habitats. Riparian tree and shrub habitat is associated with the Crow Creek crossing near MP 3.1. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Brewer's sparrow is present near MPs 7-9. Link 3-1 crosses 7.3 miles of mule deer winter range (lower elevation grass and shrub habitat) and 1.1 miles of critical elk winter habitat. There is 0.6 miles of elk summer habitat within 0.5 miles of a road in the vicinity of Link 4-1.

Link 4-2

Link 4-2 is dominated by mixed conifer and secondarily grassland habitats. Riparian tree and shrub habitat is associated with the parallel portion of Boulder River on the National Forest and the Silver-Bow Creek crossing near MP 60. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Known Canada lynx presence occurs near MPs 18.5, 38, 44, and 51. Known wolverine presence occurs near MPs 14.5 and 25. Western toad occurrence is known near MPs 15, 22, and 32. Two special status plants; musk root and peculiar moonwort are known near MPs 29.5 and 23 respectively. Link 4-2 crosses 39.9, 38.9, and 31.9 miles of elk, moose, and mule deer winter range (lower elevation grass and shrub habitat) and 10.1 miles of critical elk winter habitat. These are the highest amount of elk, moose, and mule deer winter habitat along the alternative route links in Montana. Link 4-2 crosses 15.2 and 1 mile of elk summer and crucial summer habitat respectively. There is also 35.1 and 1.8 miles of elk summer and crucial summer habitat within 0.5 miles of a road in the vicinity of Link 4-2.

Link 4-3

Link 4-3 is dominated by grassland and secondarily low sagebrush habitats. Riparian tree and shrub habitat is associated the Boulder River crossing near MP 8.5 and Whitetail Creek near MP 16.5. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is a known heron rockery near MP 8.5. Known Brewer's sparrow, mountain plover, and sage thrasher presence occurs near MPs 18, 22, and 29 respectively. Black-tailed prairie dog occurrence is known between MPs 18.5 and 24. Link 4-2 crosses 3.7 and 9.1 miles of elk and mule deer winter range (lower elevation grass and shrub habitat). High quality (agency defined) sage grouse habitat occurs from MPs 23-29 along Link 4-3.

Link 4-4

Link 4-4 is dominated by grassland habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link.

Links 7-1 and 7-2

Links 7-1 and 7-2 are dominated by grassland and secondarily mixed shrub habitats. Riparian tree and shrub habitat is associated with the Jefferson River crossing near MP 6.5. Wildlife associated with these communities (see Section 4.3.1) would be prominent along these links. There is a known heron rockery near MP 1 and sage thrasher occurrence near MP 11. Links 7-1 and 7-2 cross 6.9 miles of the Tobacco Roots to Boulder wildlife movement corridor near the start of the to MP 7. High quality (agency defined) sage grouse habitat occurs from MP 9.5-11 along Link 7-2.

Links 7-3 and 7-41

Links 7-3 and 7-41 are dominated by grassland and secondarily low sagebrush and mixed conifer habitats. Wildlife associated with these communities (see Section 4.3.1) would be prominent along these links. Western toad, Brewer's sparrow, and Canada lynx occurrence is present near MPs 4, 5, and 6 respectively. Links 7-3 and 7-41 cross 1.6 and 3.2 miles of mule deer winter habitat

respectively. There are 0.8 miles of summer elk habitat that is less than 0.5 miles from a road occurring along Links 7-3 and 7-41.

Links 7-42, 7-43, and 7-5

Links 7-42, 7-43, and 7-5 are dominated by grassland and secondarily mixed conifer habitats. Wildlife associated with these communities (see Section 4.3.1) would be prominent along these links. There are 0.6 miles of summer elk habitat that is less than 0.5 miles from a road occurring along Link 7-42.

Link 7-61

Link 7-61 is dominated by grassland and secondarily low sagebrush habitats. Riparian tree and shrub habitat is associated with river and creek crossing (see Water Resource Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along these links. There are 5.4 miles of elk winter habitat along Link 7-61. There are 0.9 miles of elk summer habitat within 0.5 miles of a road along Link 7-61. There are no known special status plants, animals, sage grouse habitat, and winter habitat for mule deer, moose, pronghorn, and bighorn sheep along Link 7-61.

Link 7-62

Link 7-62 is dominated by grassland. Wildlife associated with these communities (see Section 4.3.1) would be prominent along these links. There are 0.5 miles of elk winter habitat along Link 7-62. There are no known special status plants, animals, sage grouse habitat, and winter habitat for mule deer, moose, pronghorn, and bighorn sheep along Link 7-62.

Link 7-72

Link 7-72 is dominated by grassland and secondarily low sagebrush habitats. Riparian shrub habitat is associated with river and creek crossing (see Water Resource Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along these links. There are 3.8 and 1.5 miles of elk and mule deer winter habitat along Link 7-72. There are no known special status plants, animals, sage grouse habitat, and winter habitat for mule deer, moose, pronghorn, and bighorn sheep along Link 7-72.

Link 7-8

Link 7-8 is dominated by grassland and secondarily low sagebrush habitats. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 7-8 crosses 6.1, 3.0, and 1.9 miles of elk, moose, and mule deer winter range (lower elevation grass and shrub habitat) respectively. There are 3.2 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 7-8.

Link 7-9

Link 7-9 is dominated by grassland and secondarily low sagebrush and mixed shrub habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 7-9 crosses 0.6 and 3.1 miles of elk and mule deer winter range (lower elevation grass and shrub habitat) respectively.

Link 8

Link 8 is dominated by grassland and secondarily low sagebrush and mixed shrub habitat. Riparian tree and shrub habitat is associated the Big Hole River crossing near MP 37. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There are known heron rockeries near MPs 24 and 32. Known bald eagle occurrence is present near MPs 24, 32.5-37.5, and 42. There is sage thrasher, long-billed curlew, and Brewer's sparrow presence near MPs 39-42. Sage

thrasher occurrence is also known near MP 29.5. Plains spadefoot toad is known near MP 48-50. McCown's longspur is known near MPs 48-50. Townsend big-eared bat is known MPs 28.5. Two special status plants; silver star and Parry's fleabane, are known near MPs 15.5-17.5. Link 8 crosses 17.5, 32, and 1.7 miles of elk, pronghorn, and mule deer winter range (lower elevation grass and shrub habitat). There are 3.8 miles of summer elk habitat and 7.5 miles of summer elk habitat that is less than 0.5 miles from a road occurring along Link 8. High quality (agency defined) sage grouse habitat occurs from MPs 17.5-23 along Link 8. There is one known sage grouse lek 4.0 miles from Link 8 near MPs 49-50. Link 8 crosses 9.4 miles of Tobacco Roots to highlands and 6.6 miles of the Divide to Dillon wildlife movement corridors. Both corridors are considered very low priority (American Wildlands 2008).

Link 11-21

Link 11-21 is dominated by mixed conifer and secondarily grassland and low sagebrush habitat types. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 11-21 crosses 3.3 miles of elk and mule deer winter habitat. There is 1.0 mile of summer elk habitat that is less than 0.5 miles from a road occurring along Link 11-21.

Link 11-22

Link 11-22 is dominated by grassland and secondarily by low sagebrush habitats. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is western toad occurrence near MP 4-7. Link 11-21 crosses 9.0 miles of elk and mule deer winter habitat. There are 2.2 miles of summer elk habitat and 5.0 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 11-22.

Link 11-23

Link 11-23 is dominated by grassland and secondarily by low sagebrush. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is Western toad, Canada lynx, fringed myotis, and prairie falcon occurrence near MPs 4.5, 7, 14, and 15 respectively. Link 11-23 crosses 6.8, 3.5, and 10.4 miles of elk, mule deer, and bighorn sheep winter habitat respectively. There are 0.9 miles of summer elk habitat and 5.0 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 11-23. Link 11-23 crosses 5.4 miles of high quality (agency defined) sage grouse habitat and there are four sage grouse leks 4.0 miles from Link 11-23. Link 11-23 crosses 7.2 miles of the Divide to Dillon wildlife movement corridors. This corridor is considered very low priority (American Wildlands 2008). Link 11-23 crosses 11.8 miles of the Pioneers to Highlands wildlife movement corridors. This corridor is considered high priority (American Wildlands 2008).

Link 11-3

Link 11-3 is dominated by grassland and secondarily low sagebrush. Riparian tree and shrub habitat is associated the Rock, Willow, Cherry, and Birch Creek crossings along Link 11-3. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is McCown's longspur, sage sparrow, sage thrasher, and Brewer's sparrow occurrence near MPs 14-18. Plains spadefoot toad is known near MP 15 to the terminus. There is one special status plant known: perennial summer Cyprus, near MPs 4.5-5.5. Link 11-3 crosses 5.4, 3.4, and 0.6 miles of mule deer, pronghorn, and bighorn sheep winter habitat respectively. Link 11-4 crosses 4.5 miles of high quality (agency defined) sage grouse habitat and there are three sage grouse leks 4.0 miles from Link 11-3 and one lek 2.0 miles from Link 11-3. Link 11-3 crosses 19.2 miles of the Divide to Dillon wildlife movement corridors. This corridor is considered very low priority (American Wildlands 2008).

Link 11-4

Link 11-4 is dominated by grassland and secondarily low sagebrush. Riparian tree and shrub habitat is associated the Rock, Willow, Cherry, and Birch Creek crossings along Link 11-4. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is sage thrasher, and Brewer's sparrow occurrence near MPs 14-17 and 20.5 to the link terminus. There is McCown's longspur and sage sparrow occurrence near MPs 14-16 and 17 respectively. Plains spadefoot toad is known near MP 17. There is one special status plant known: perennial summer Cyprus, near MP 4.5. Link 11-4 crosses 2.0, 3.4, and 18.4 miles of elk deer, bighorn sheep, and mule deer winter habitat respectively. Link 11-4 crosses 7.0 miles of high quality (agency defined) sage grouse habitat; there are four sage grouse leks 4.0 miles from Link 11-4, and three lek 2.0 miles from Link 11-3. Link 11-4 crosses 19.9 miles of the Divide to Dillon wildlife movement corridors. This corridor is considered very low priority (American Wildlands 2008).

Link 13

Link 13 is dominated by low sagebrush. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is sage thrasher, and Brewer's sparrow occurrence near MP 3.5 to the link terminus. Link 11-13 crosses 4.0 miles of mule deer winter habitat respectively. There is one sage grouse lek 4.0 miles from Link 13 and one lek 2.0 miles from Link 13. Link 13 crosses 3.0 miles of the Divide to Dillon wildlife movement corridors. This corridor is considered very low priority (American Wildlands 2008).

Links 16 (1-4)

Link 16 is dominated by low sagebrush and secondarily grassland habitat. Riparian tree and shrub habitat is associated with the Beaverhead River crossings along Link 16. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is bald eagle occurrence near MPs 23 and 43. There is McCown's longspur near MPs 29-32. Brewer's sparrow and sage thrasher are known near MPs 44-48. Western spotted skunk is known near MPs 52-55. Western toad is known near MP 65.5. There are two special status plants known: scallop-leaf lousewort and railroad canyon wild buckwheat, near MPs 25 and 55 respectively. Link 16 crosses 24.8 and 14.5 miles of mule deer and pronghorn winter habitat respectively. Link 16-1 crosses 23.3 miles of high quality (agency defined) sage grouse habitat and there are four sage grouse leks 4.0 miles from Link 16, and two leks 2.0 miles from Link 16. Link 16-1 crosses 9.1 miles of the Divide to Dillon and 8.2 miles of Horse Prairie wildlife movement corridors respectively. These corridors are considered very low priority (American Wildlands 2008). Link 16-2 crosses 13.9 miles of the Sage Creek Basin wildlife movement corridors. This corridor is considered very high priority (American Wildlands 2008). Link 16-3 crosses 0.9 miles of low waterfowl use area; this is primarily in the vicinity of Clark Canyon Reservoir near MPs 26.5 – 29.5.

Link 18-1

Link 18-1 is dominated by big sagebrush and secondarily low sagebrush grassland habitat. Riparian tree and shrub habitat is associated with the Medicine Lodge and Cabin Creek crossings along Link 18-1. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is Brewer's sparrow occurrence near MPs 2 and 55.5-58.5. There is sage thrasher occurrence near MP 2. Sage sparrows are known near MPs 17.5-21.5 and 52.5-58.5. There are eleven special status plant known: rail head milkvetch occurs near MP 13.5; lemhi beardtongue occurs near MPs 17.5 and 42; bitterroot milkvetch occurs near MPs 14.5, 15, 20, and 20.5; chicken sage occurs near MPs 6.5, 18.5, and 59.5; small flower pennycress occurs near MPs 39 and 60; Idaho sedge occurs near MPs 53.5, 58.5, 57.5, and 62; alkali primerose, alpine meadowrue, and mealy primerose occur near MPs 52.5, 54.5, and 56; alkali primerose, alpine meadowrue, low braya, and mealy primerose occur near MP 56; and marsh fleabane and alpine meadowrue occurs near MP 62. Link 18-1 crosses 0.5 and 7.1 miles of elk and mule deer winter habitat respectively. There are 0.1 miles of

summer elk habitat and 4.2 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 18-1. Link 18-1 crosses 63.2 miles of high quality (agency defined) sage grouse habitat and there are seven sage grouse leks 4.0 miles from Link 18-1, and seven leks 2.0 miles from Link 16. Link 18-1 crosses 18.5 miles of the Horse Prairie wildlife movement corridor. This corridor is considered low priority (American Wildlands 2008). Link 18-1 crosses 16.9 miles of the Tendoy to South Beaverhead wildlife movement corridors. This corridor is considered high priority (American Wildlands 2008). Link 18-1 crosses 1.1 miles of moderate waterfowl use area.

Table 4.2-2 Special Status Animal Species of Idaho that May Occur in the Study Area

Common Name (Scientific Name)	Status ¹					General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
BIRDS													
Greater Sage-Grouse (<i>Centrocercus urophasianus</i>)		X	X	✓	✓		✓	✓		✓		18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31	
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	C				✓				✓			18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31	
American white pelican (<i>Pelecanus erythrorhynchos</i>)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4	
Greater Sage-Grouse (<i>Centrocercus urophasianus</i>)		X	X	✓	✓		✓	✓		✓		18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31	
MAMMALS													
Canada Lynx (<i>Lynx Canadensi</i>)	T			✓	✓				✓			18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31	
Gray Wolf (<i>Canis lupus</i>)	EXP	X		✓	✓				✓			18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31	
Pygmy Rabbit (<i>Brachylagus idahoensis</i>)		X	X	✓	✓		✓	✓				18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31	
AMPHIBIANS AND REPTILES													
Northern leopard frog (<i>Rana pipiens</i>)		X	X	✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4	
INVERTEBRATES													
Shortface lanx (<i>Fisherola nuttalli</i>)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4	
Idaho pointed-head grasshopper (<i>Acrolophitus pulchellus</i>)		X			✓	✓						18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31	

¹X = sensitive ²T= threatened, E = endangered, EXP = experimental, C = candidate

Table 4.2-2 Special Status Animal Species of Idaho that May Occur in the Study Area

Common Name (Scientific Name)	Status ¹				General Habitat Association							Link Association(s)
	USFWS ²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
Warm Springs Zaitzevian Riffle Beetle (<i>Zaitzevia thermae</i>)	C				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Utah valvata snail (<i>Valvata utahensis</i>)	E				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Bliss Rapids snail (<i>Taylorconcha serpenticola</i>)	T				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Snake River physa snail (<i>Physa natricina</i>)	E				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
St. Anthony sand dune tiger beetle (<i>Cicindela arenicola</i>)		X			✓						✓	21, 23, 25-2
Blind Cave leiodid beetle (<i>Glacivicola bathyscoides</i>)		X			✓						✓	21, 23, 25-2
FISH												
Bull Trout (<i>Salvelinus confluentus</i>)	T			✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Steelhead (<i>Oncorhynchus mykiss</i>)	T				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Spring/Summer Chinook Salmon (<i>Oncorhynchus tshawytschas</i>)	T				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Sockeye Salmon (<i>Oncorhynchus nerka</i>)	E				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Westslope cutthroat trout (<i>Oncorhynchus clarki lewisi</i>)		X		✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Yellowstone cutthroat trout (<i>Oncorhynchus clarki bouvieri</i>)		X		✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Redband Trout (<i>Oncorhynchus mykiss gibbsi</i>)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Shoshone Sculpin (<i>Cottus greeniei</i>)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Wood River sculpin (<i>Cottus leiopomus</i>)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4

¹X = sensitive ²T= threatened, E = endangered, EXP = experimental, C = candidate

4.2.3 FEDERAL SPECIAL STATUS WILDLIFE SPECIES OF MONTANA

The following species have been identified by agencies as species protected under ESA, USFS, and/or BLM authority (see section 2.0) as special status species. Special status species under the authority of the ESA and/or are other species status species designated by agencies and have documented elemental occurrence according to Montana Natural Heritage have a brief description of the legal status, habitat requirements, and distribution located in Appendix C.

4.2.4 IDAHO WILDLIFE

Link 18-2

Link 18-2 is dominated by big sagebrush and secondarily low sagebrush. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is Canada lynx, and golden eagle occurrence near MPs 6-9. There is great gray owl occurrence near MP 10. Wolverine is known near MPs 16-19 and ferruginous hawk occurrence is known near MP 24.5 to the link terminus. Link 18-2 crosses 4.1 and 12.7 miles of bighorn sheep winter habitat and elk critical winter habitat respectively. There are 1.3 miles of summer elk habitat and 25.3 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 18-2. Link 18-2 cross 27 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Link 18-2 crosses 25.3 miles of high quality (agency defined) sage grouse habitat and there is one sage grouse lek 4.0 miles from Link 18-2, and one lek 2.0 miles from Link 18-2.

Link 20

Link 20 is dominated by low sagebrush and secondarily mixed shrub habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is northern goshawk and great gray owl occurrence near MPs 7, 8-9, and 11. There is great gray owl occurrence near MP 10. Wolverine is known near MPs 16-19 and ferruginous hawk occurrence is known near MP 24.5 to the link terminus. There is one special status plant known: Idaho sedge, near MPs 8, 10, and 11. Link 20 cross 9.4 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Link 20 crosses 4.2 miles of high quality (agency defined) sage grouse habitat and there are three sage grouse leks 4.0 miles from Link 20, and one lek 2.0 miles from Link 20.

Link 21

Link 21 is dominated by big and low sagebrush habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is ferruginous hawk occurrence near MPS 27-28, 29-32.5, 37.5, 50.3, 52-54, 57.5-61, and 80-82. There is golden eagle occurrence near MP 45. Idaho dunes tiger beetle, loggerhead shrike, and long-billed curlew are known near MPs 25-26. American white pelican, black tern, Franklin's gull, long-billed curlew, marbled godwit, mountain plover, trumpeter swan, white-face ibis, Wilson's phalarope, willet, yellow rail, and yellow-billed cuckoo occurrence is known near MPs 33.5-37. There is one special status plant known: blue grama, near MPs 3.5-5.5. There is 30.8 miles of winter elk habitat along Link 21. There are 28.2 miles of summer elk habitat and 45.5 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 21. Link 21 crosses 51.2 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat and 45.2 miles of moderate density habitat (200-500 pronghorn). Link 20 crosses 51.8 miles of high quality (agency defined) sage grouse habitat and there are seven sage

grouse leks 4.0 miles from Link 20, and seven leks 2.0 miles from Link 20. Link 21 crosses 7.0 miles of low waterfowl use area and 0.7 miles of high waterfowl use area.

Link 22

Link 22 is dominated by big and low sagebrush and secondarily grassland habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is ferruginous hawk occurrence near MPs 4-7, 10-16, and 23 to the link terminus. There is loggerhead shrike, and long-billed curlew occurrence near MPs 14-15 and 12-15 respectively. There are 1.4 miles of summer elk habitat and 23.9 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 22. Link 22 crosses 25.3 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Link 22 crosses 20.7 miles of high quality (agency defined) sage grouse habitat and there is one sage grouse lek 1.4 miles from Link 20, and six leks 2.0 miles from Link 22.

Link 23

Link 23 is dominated by big sagebrush and grassland habitat. Riparian tree and shrub habitat is associated with the Birch Creek crossing along Link 23. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is ferruginous hawk occurrence near MPs 1-2, 16-19, and 26. There is bald eagle occurrence near MPs 11-13. There is mountain plover occurrence near MP 28 to the link terminus. There are three special status plant known; three-leaf milkvetch, lehmi milkvetch; and spreading gilia near MPs 12.5 and 28 to the link terminus respectively. There are 1.9 and 2.4 miles of critical winter elk and mule deer habitat along Link 23. There are 0.9 miles of summer elk habitat and 28.1 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 21. Link 23 cross 15.1 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat and 13.9 miles of high density habitat (>500 pronghorn). Link 23 crosses 27.8 miles of high quality (agency defined) sage grouse habitat and there are six sage grouse leks 4.0 miles from Link 23, and six leks 2.0 miles from Link 23. There is likely additional sage grouse and pygmy rabbit occurrences along Link 23; however biological data was limited at the time this report was written.

Link 24

Link 24 is dominated by low sagebrush and secondarily low sagebrush and grassland habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is mountain plover occurrence near MPs 0-3. There is ferruginous hawk occurrence near MPs 0-2. There is townsend big-ear bat occurrence near MPs 16-18. There are two special status plant known: lehmi milkvetch, and spreading gilia near MPs 0-1. There are 18.9 and 0.1 miles of winter and critical winter elk habitat along Link 24. There are 1.1 miles of summer elk habitat and 20.3 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 24. Link 24 cross 6.9 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat and 20.9 miles of moderate density habitat (200-500 pronghorn). Link 24 crosses 24.8 miles of high quality (agency defined) sage grouse habitat and there are three sage grouse leks 4.0 miles from Link 24, and two leks 2.0 miles from Link 24. There is likely additional sage grouse and pygmy rabbit occurrences along Link 24; however biological data was limited at the time this report was written.

Link 25-11

Link 25-11 is dominated by grassland and secondarily big and low sagebrush habitat. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is mountain plover, sage sparrow, and loggerhead shrike occurrence near MPs 0-3.5, 11.5-14.5, and 20.5-24.5. There is ferruginous hawk occurrence near MPs 0-3 and 13.5-17.5. There are three special status plant known: winged-seed evening primerose occurs near MPs 15.5, 17, and 19.5-20.5; and, lehmi milkvetch, and spreading gilia occurs near MPs 0-1.5. There are 8.2 and 0.3 miles of winter and

critical winter elk habitat along Link 25-11. There are 3.4 miles of summer elk habitat and 22.5 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 25-11. Link 25-11 cross 2.2 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat, 22.3 miles of moderate density habitat (200-500 pronghorn), and 1.4 miles of high density (> 500 pronghorn) pronghorn habitat. Link 25-11 crosses 20.4 miles of high quality (agency defined) sage grouse habitat.

Link 25-12

Link 25-12 is dominated by big and low sagebrush and secondarily mixed shrub habitat. Riparian tree and shrub habitat is associated with the Big Lost River crossing along Link 25-12. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is mountain plover, sage sparrow, and loggerhead shrike occurrence near MPs 0-3.5, 11.5-14.5, and 20.5-24.5. There is ferruginous hawk occurrence near MPs 0-3 and 13.5-17.5. There are three special status plant known: winged-seed evening primrose occurs near MPs 15.5, 17, and 19.5-20.5; and, lehmi milkvetch, and spreading gilia occurs near MPs 0-1.5. There are 8.2 and 0.3 miles of winter and critical winter elk habitat along Link 25-11. There are 3.4 miles of summer elk habitat and 22.5 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 25-11. Link 25-12 cross 12.1 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat and 27.7 miles of moderate density (200-500 pronghorn) pronghorn habitat. Link 25-12 crosses 37.1 miles of high quality (agency defined) sage grouse habitat and there are four sage grouse leks 4.0 miles from Link 25-12, and four leks 2.0 miles from Link 25-12.

Link 25-3

Link 25-3 is dominated by low sagebrush and secondarily big sagebrush habitat. Riparian tree and shrub habitat is associated stream and river crossing along Link 25-3 (see Water Resources Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There are 16 miles of winter mule deer habitat along Link 25-3. There are 4.5 miles of summer elk habitat and 4.6 miles of summer elk habitat less than 0.5 miles from a road in the vicinity of Link 25-3. Link 25-3 cross 7.5 miles of habitat that is considered moderate density (200-500 pronghorn) and 14.8 miles of high density (> 500 pronghorn) pronghorn habitat. Link 25-3 crosses 20.3 miles of high quality (agency defined) sage grouse habitat and there are 4 sage grouse leks 4.0 miles from Link 25-3, and 6 leks 2.0 miles along Link 25-3. There is bald eagle near MP 14.5, northern goshawk near 15.5, and North American Wolverine near MP 17 occurrences along Link 25-3. There are two special status plant known: bugleg goldenweed occurs near MP 3.5; and, mourning milkvetch MPs 13.5-15.5.

Link 25-4

Link 25-4 is dominated by big and low sagebrush and secondarily grassland habitat. Riparian tree and shrub habitat is associated stream and river crossing along Link 25-4 (see Water Resources Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There are 12 miles of winter mule deer habitat along Link 25-4. Link 25-4 cross 15.8 miles of habitat that is considered low density (< 200 pronghorn) and 7.8 miles of moderate density (200-500 pronghorn) pronghorn habitat. Along Link 25-4 there is 1 sage grouse lek 4.0 miles and 1 lek 2.0 miles away from the proposed transmission line. There is Brewer's sparrow near MP 20, sage thrasher, loggerhead shrike, long-billed curlew, Brewer's sparrow, and ferruginous hawk from MPs 27-32, and there is loggerhead shrike near the terminus of Link 25-4. There are two special status plant known: bugleg goldenweed occurs near MP 3.5; and, mourning milkvetch MPs 13.5-15.5.

Link 26-1

Link 26-1 is dominated by low sagebrush and secondarily mixed shrubland habitat. Riparian tree and shrub habitat is associated stream and river crossing along Link 26-1 (see Water Resources Section).

Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 26-1 cross 16.7 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Link 26-1 crosses 7.3 miles of high quality (agency defined) sage grouse habitat and there are 4 sage grouse leks 4.0 miles and 8 leks 2.0 miles away from the proposed transmission line. There is Townsend's big-eared bat occurrence from MPs 7-11.

Link 26-2

Link 26-2 is dominated by low sagebrush and irrigated land. Link 26-2 is dominated secondarily by big sagebrush habitat. Riparian tree and shrub habitat is associated stream and river crossing along Link 26-2 (see Water Resources Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 26-2 cross 27.8 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Link 26-2 has 1 sage grouse lek 4.0 miles away from the proposed transmission line. There is Townsend's big-eared bat occurrence from MPs 7-11.

Link 26-3

Link 26-3 is dominated by low sagebrush and secondarily grassland habitat. Riparian tree and shrub habitat is associated stream and river crossing along Link 26-3 (see Water Resources Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There is 8.9 miles of winter mule deer habitat along Link 26-3. Link 26-3 cross 8.2 miles of habitat that is considered low density (< 200 pronghorn) and 30 miles that is considered moderate density pronghorn habitat. There are 3 sage grouse leks 4.0 miles and 1 lek 2.0 miles away from the proposed transmission line along Link 26-3. There is Idaho dune tiger beetle occurrence near MPs 14 and 19.5, long-billed curlew occurrence near MPs 33.5 and the terminus, and sage thrasher, ferruginous hawk, and northern leopard frog occurrence near MP 20.5.

Link 26-4

Link 26-4 is dominated by big and low sagebrush and secondarily grassland habitat. Riparian tree and shrub habitat is associated stream and river crossing along Link 26-4 (see Water Resources Section). Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. There are 41 miles of winter mule deer habitat crossed by Link 26-4. There are 25.4 of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Along Link 26-4 there is 1.7 miles of high quality (agency defined) sage grouse habitat and there are 4 sage grouse lek 4.0 miles and 2 leks 2.0 miles away from the proposed transmission line. There is sage thrasher occurrence near MP 40.5, loggerhead shrike occurrence near the terminus, Brewer's sparrow, sage sparrow, and long-billed curlew near MPs 42-45, long billed curlew near MPs 0-3, 24, and 34-39, loggerhead shrike near MPs 9-12.5, Idaho dune tiger beetle occurrence near MP 30, and Brewer's sparrow, ferruginous hawk, and northern goshawk occurrence near MP 17. There is one special status plant known: Picabo milkvetch near MP11.

Link 27

Link 27 is dominated by low sagebrush. Wildlife associated with this community (see Section 4.3.1) would be prominent along this link. There are 0.4 miles of winter mule deer habitat along Link 27. There is loggerhead shrike occurrence along Link 27.

Link 28

Link 28 is dominated by low sagebrush. Wildlife associated with this community (see Section 4.3.1) would be prominent along this link. There are 1.5 miles of low density (< 200 pronghorn) pronghorn habitat along Link 28. There is American white pelican occurrence along Link 28.

Link 30

Link 30 is dominated by low sagebrush and secondarily grassland habitat. Riparian tree and shrub habitat is associated with river and stream crossings (see Water Resource Section) along Link 30. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 30 crosses 16.3 miles of habitat that is considered low density (< 200 pronghorn) pronghorn habitat. Along Link 30 there is one sage grouse lek 4.0 miles and one lek 2.0 miles from the proposed transmission line. There is Townsend big-eared bat occurrence near MPs 8-10 and ferruginous hawk occurrence near the beginning of the link and near MPs 6-8. There is one special status plant known: obscure phacella near MPs 8.5.

Link 31

Link 31 is dominated by low sagebrush and secondarily grassland habitat. Riparian tree and shrub habitat is associated with stream and river crossings (see Water Resources Section) along Link 31. Wildlife associated with these communities (see Section 4.3.1) would be prominent along this link. Link 31 crosses 21 miles of habitat that is considered low density (< 200 pronghorn) and 3.4 miles of moderate density (200-500 pronghorn) pronghorn habitat. Along Link 30 there are 2.7 miles of high quality sage grouse habitat (agency defined) and there is 1 sage grouse lek 4.0 miles and 3 leks 2.0 miles from the proposed transmission line. There is Townsend big-eared bat occurrence near MPs 11-13, long-billed curlew occurrence near MPs 6-7, 19-21, and near the terminus, and Swainson's hawk occurrence near MPs 11-14.

4.2.5 FEDERAL SPECIAL STATUS WILDLIFE SPECIES OF IDAHO

The following species have been identified by agencies as species protected under ESA, USFS, and/or BLM authority (see section 2.0) as special status species. Special status species under the authority of the ESA and/or are other species status species designated by agencies and have documented elemental occurrence according to Idaho Conservation Data Center. A brief description for each species including: the legal status, habitat requirements, and distribution located in Appendix C.

5.0 IMPACT METHODS

Impacts to wildlife would result from actions that alter wildlife habitats. Three areas are the focus of this analysis: habitat change, habitat fragmentation, and disturbance. Alteration may occur through direct habitat loss via surface disturbance or indirectly through the reduction in habitat quality such as increased noise levels or the presence of anthropogenic structures. Both the direct and indirect impacts of transmission line development are associated with ground disturbances caused by constructing road networks for access, and installation of towers, conductors, substations, other associated infrastructure, and ongoing maintenance.

5.1 IMPACT ASSESSMENT

A step in the process of selecting an environmentally preferred route for the project is determining initial and residual impact levels from each alternative route link. Potential effects on biological resources were initially evaluated in the regional study and associated sensitivity analysis completed in November 2006. Many sensitive features were avoided through the regional study but it was not possible to avoid all of them including biological resources. Consequently, it was necessary to map all known biological resources where data was available within the study area and prepare an impact assessment and mitigation planning procedure.

Impacts to biological resources inventoried in Section 3.0 were evaluated considering the following factors:

1. Construction, operation, and maintenance related impacts.
2. Occurrence of affected biological resource areas.
3. Access level category (level of impact expected from ground disturbance).
4. Mitigation measures to reduce initial impact levels.

5.1.1 ACCESS LEVELS AND GROUND DISTURBANCE

Level 1 *Existing Improved Roads:* Previously disturbed. Roads generally are in good condition but may require small improvements at stream crossings, steep slope areas, and other locations. New ground disturbance would be minimal. New spur roads would be required to access each structure site; an average of 300 feet of new spur road for each structure. Spur roads would disturb approximately 0.4 acres per mile of transmission line.

Level 2 *Roads that Require Improvement:* Previously disturbed. Existing two-track or narrow unimproved roads would require improvement to make roads serviceable (e.g. mowing, grading) for construction. Low ground disturbance; assumed approximately 0.5 to 1.0 miles of road improvements for each mile of transmission line. Road improvements would disturb approximately 0.75 to 1.0 acres per mile of transmission line. An average of 300 feet of spur roads would be required to access each structure site. Spur roads would disturb about 0.4 acres per mile of transmission line.

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- Level 3** *Construct Road in Flat Terrain (0 to 8 percent):* Low to moderate ground disturbance for new access road construction; assumed approximately 1.0 to 1.2 miles of new roads would be required for each mile of transmission line. Road construction would disturb approximately 1.7 to 2.0 acres per mile of transmission line.
- Level 4** *Construct Road in Sloping Terrain (8 to 15 percent):* Moderate ground disturbance for new access road construction; assumed 1.2 to 1.5 miles of new road would be required for each mile of transmission line. Road construction would disturb approximately 2.0 to 2.5 acres per mile of transmission line.
- Level 5** *Construct Road in Steep Terrain (15 to 30 percent):* Moderate to high ground disturbance for new access road construction; assumed approximately 1.5 to 2.0 miles of new road would be required for each mile of transmission line. Road construction would disturb approximately 2.5 to 3.4 acres per mile of transmission line.
- Level 6** *Construct Road in Very Steep Terrain (over 30 percent):* High to very high ground disturbance for new access road construction; assumed approximately 2.0 to 3.0 miles of new road would be required for each mile of transmission line. Road construction would disturb approximately 3.4 to 5.0 acres per mile of transmission line.

IMPACT LEVELS

Access level categories and resource sensitivity levels (described above) were the main factors used in estimating potential impact levels for biological resources. The impact levels are defined as follows:

High – A high level of impact would result if the construction, operation, maintenance or abandonment of the proposed project would potentially cause a significant or substantial adverse change or stress to biological resources such as.

Moderate – A moderate impact would result if the construction, operation, maintenance or abandonment of the proposed project would potentially cause some adverse change or stress (ranging between significant and insignificant) to biological resources.

Low – A low impact would result if the construction, operation, maintenance or abandonment of the proposed project would potentially cause an insignificant or minor adverse change or stress to biological resources.

No Identifiable Impact – No identifiable impact would be indicated where no measurable impact would occur to the specific resource under investigation.

The criteria for assessing the initial impacts to biological resources are summarized in Table 5.1-1.

Table 5.1-1 Impact Summary to Biological Resources

Impact Type	MSTI Project Attribute	Potential Impact and Biological Resource effects	Impact type and longevity
Direct flora Injury and/or mortality	Vehicle and human trampling during construction and maintenance	Destruction, mortality, and injury to vegetation, reduction in habitat quantity and quality	Biological disturbance, change, and fragmentation Long-term within the MSTI footprint from construction, access roads, and structures Short-term in areas adjacent to the MSTI ROW
Direct fauna Injury and/or mortality	Vehicle and human trampling during construction and maintenance	Destruction, mortality, and injury to wildlife species. Faunal species and species with limited mobility are most susceptible, nest destruction	Biological change Short-term within the MSTI footprint from construction, structures, and in areas adjacent to the MSTI ROW Long-term for access roads
Ground disturbance	Construction, tower foundations, access roads	Habitat quantity and quality reduction, habitat fragmentation	Biological disturbance, change, and fragmentation Short-term within the MSTI footprint from construction Long-term from access roads and structures
Fugitive dust generation	Construction, maintenance, and repair activities	Reduce photosynthesis, impair species respiration, reduction in habitat quality	Biological disturbance and change Short-term within the MSTI footprint from construction Long-term from access roads
Exposure to pollutants	Chemical spills from construction and maintenance	Reduce survival, population, growth	Biological disturbance Short-term, localized to construction and maintenance sites.
Noise, Human presence	Construction, maintenance, and repair activities	Displace wildlife, disrupt breeding, migration, foraging	Biological disturbance Short-term within the MSTI footprint from construction Long-term from access roads
Fire	Construction and maintenance equipment, human access	Habitat loss and reduction in habitat quality through the potential post-fire establishment of noxious weeds	Biological disturbance, change, fragmentation Short-term in the construction footprint for the transmission line Long-term for access roads
Avian Collisions	Conductors, shield wires, and guy-wires	Reduction in avian populations, waterfowl and upland game birds would be most susceptible	Biological disturbance Long-term for the MSTI project ROW

Table 5.1-1 Impact Summary to Biological Resources

Impact Type	MSTI Project Attribute	Potential Impact and Biological Resource effects	Impact type and longevity
Increased predator habitat	Transmission towers	Raptors and corvids exploit perching opportunities, resulting in increased predation on small mammal and avian species	Biological disturbance Long-term for the MSTI project ROW

5.1.2 TEMPORARY IMPACTS TYPES

Temporary impacts to biological resources are short term. These types of impacts are often associated with construction activities and include the generation of noise, dust, human presence, etc. Temporary impacts will usually diminish upon completion of construction activities. However intermittent temporary impacts may occur during maintenance and repair activities. Mitigation measures such as best management practices associated with construction will often reduce the magnitude of temporary impacts.

5.1.3 PERMANENT IMPACTS TYPES

Permanent impacts to biological resources for the Project reside in three categories: habitat change, habitat fragmentation, and habitat disturbance. These types of impacts are often long term and may exist for the life of the project in some situations (e.g. collision risk, perching habitat). A detailed discussion about the three permanent impacts follows.

5.1.3.1 Change

Impacts resulting in change include change in habitat, species composition, species behavior, etc. Biological change was evaluated through GIS data analysis of vegetation communities within the study area and equated to habitat. Habitat change for our analysis is generally associated with (1) habitat removal and/or destruction (permanent usually) and (2) habitat conversion (i.e. removal of shrubland and reclamation with grassland), and introduced habitat features (perching habitat associated with towers). Based on the impact model habitat loss was calculated within each habitat type by disturbance level and classified as permanent or temporary based on the reclamation potential and biological resource benefit.

5.1.3.2 Habitat Fragmentation

Habitat and populations can become fragmented through the construction of linear projects such as transmission lines. Habitat fragmentation is comprised of four components according to Franklin *et al.* (2002), these include: 1) What is being fragmented? (wildlife habitat; to include terrestrial and aerial); 2) What scale is being used? (the MSTI project area in this case); 3) What is the mechanism causing fragmentation? (the primary mechanism in this case is the transmission line and associated infrastructure); 4) What is the extent and pattern of fragmentation? (this depends on the organism being evaluated, see the analysis below). The analysis below focuses on: fragmentation from linear feature associated with the transmission line (access roads, towers, and conductor) and a review of associated literature for the Western U.S., and the impacts to wildlife (chiefly big game and avian species).

Habitat loss from roads has broader effects than just the conversion of a small area of land to road surfaces. Roads fragment by changing landscape structure and by directly and indirectly affecting species. Habitat effects of roads on the landscape include dissecting vegetation patches, increasing the edge-affected area, decreasing interior area, and increasing the uniformity of patch characteristics, such as shape and size (Reed *et al.* 1966). Road-avoidance behavior is characteristic of large mammals such as elk, deer, bighorn sheep, grizzly, and wolf. Avoidance distances of 100 to 200 meters are common for these species (Lyon 1983).

Road density is a useful index of the effect of roads on wildlife populations (Forman *et al.* 1997). Some studies have shown that a few large areas of low road density, even in a landscape of high average road density, may be the best indicator of suitable habitat for large vertebrates (Rudis 1995).

The evidence is strong that forest roads displace some large mammals and certain birds (such as spotted owls and marbled murrelets) and that displaced animals may suffer habitat loss as a result. Effects of roads on small mammals and songbirds are generally described as less severe, with changes expressed as modifications of habitat that cannot readily be classified as detrimental or beneficial. This interpretation is also probably true for amphibians and reptiles.

Roads also create habitat edge (Mader 1984, Reed *et al.* 1996); increased edge changes habitat in favor of species that use edges, and to the detriment of species that avoid edges or experience increased mortality near or along edges (Marcot *et al.* 1994). The continuity of the road system also creates a corridor by which edge-dwelling species of birds and animals can penetrate the previously closed environment of continuous forest cover. Species diversity can increase, and increased habitat for edge-dwelling species can be created.

Roads and their adjacent environment qualify as a distinct habitat and have various species, population, and landscape-scale effects (Baker and Knight 2000, Dawson 1991, van der Zande *et al.* 1980). Some research has attempted to describe habitat modifications caused specifically by roads, but most of this work is species and site-specific (Lyon 1983).

In general, road building fragments habitat, and creates habitat edge, modifying the habitat in favor of species that use edges. Edge-dwelling species are generally not threatened, however, because the human-dominated environment has provided ample habitat for them. Any habitat modifications attributed to the road may be insignificant compared to the effects of the activity, such as gas development activities, for which the road was built.

Concern for habitat fragmentation is increasing in wildlife management (Baker 2000, Knight *et al.* 2000) and is considered a global concern for biological diversity (Knight *et al.* 2000). Species declines, and shifts of animal distributions have led to a more modern focus on the causes of habitat fragmentation and the effect this may have on wildlife. Avian responses to habitat fragmentation included life cycle alterations, increased parasitism, and habitat affinity associations (Weller *et al.* 2002; Knight *et al.* 2000). Attempts have been made at extrapolating these data to the western U.S.; however, landscapes in the eastern and western U.S. are quite dissimilar, raising the question of the validity of this approach.

Habitat fragmentation affects wildlife regardless of the location, but the degree to which wildlife is affected, and the species-specific effects, is in need of more research before definitive conclusions can be made. Habitat fragmentation occurs along the MSTI study area, but the degree of effects to wildlife cannot be drawn with the current available data. The discussion below focuses on generalized results of habitat fragmentation analysis along the MSTI study area.

The primary cause of habitat fragmentation in the southern Rocky Mountains is roads (Knight *et al.* 2000). Existing roads, projected roads, and the remaining core areas left over from the effect zones were considered for fragmentation-related impacts that are likely to affect wildlife. The road effect zone (effect zone) is defined by Forman (Weller *et al.* 2002) as “the area of influence on edge environments parallel to roads”. The core area is a component of natural habitat composed of “contiguous blocks of uniform habitat types away from natural breaks or habitat edges” (Weller *et al.* 2002).

Fragmentation results in many impacts to wildlife habitat. As the number of fragments increases in a given area, the core area size decreases (Knight *et al.* 2000), reducing the patches uninterrupted by human disturbance. The amount of edge area increases with the increase of fragments (Knight *et al.* 2000), and habitat connectivity decreases with increased fragmentation (Knight *et al.* 2000). Decreased connectivity may favor the habitat generalist wildlife species over the forest-adapted species, threatening species richness or diversity at regional scales (Knight *et al.* 2002). Habitat generalists, such as coyotes and brown-headed cowbirds, use road corridors to easily access the interior forest. These predators and nest parasites can have direct impacts on forest-adapted species populations. Opening up forest and to a lesser degree shrubland habitat also increases solar exposure during winter months creating earlier forage exposure for several species.

In general, species abundance declines with habitat reduction as a result of fragmentation. In some cases species-specific responses to the size of effect zones that may occur from project actions are summarized below.

- Bird species (Brewer’s and sage sparrows, and sagebrush obligates) were documented to have a 50 percent decline in guilds within 100 meters (328 feet) of roadways in the Upper Green River Basin (Weller *et al.* 2002).
- Roads that are approximately 10 meters wide (33 feet) may create a thermal road effect zone more than 100 meters (328 feet) into the adjacent habitat (Knight *et al.* 2000).
- Elk and mule deer require contiguous habitat areas at least 250 acres in size and at least 0.5 miles from a road (BLM 2003).
- Large ungulates (such as mule deer and elk) in Colorado were documented to be more numerous 200 meters (656 feet) away from road edges (Rost and Bailey 1979).
- Block and Lindzey found that elk in western Wyoming avoided relatively high-density oil and gas fields (Weller *et al.* 2002).
- Perry and Overly suggest that more than 640 acres of elk habitat can be affected by one mile of road (Weller *et al.* 2002).
- Hayden and Wing (1991) are not able to report significant impacts to elk greater than 0.25 miles from a secondary road. Further more they report no increase in elk heart rates 330 feet from a major interstate highway.
- Hutto documented songbird affinities to road edges for edge-associated species (chipping sparrow, American robin) and interior forest associations (away from roads) for forest-

- interior species (western-tanager, golden crowned kinglets) in conifer forests in Montana (Hutto 1995).
- Knight *et al.* reported increased nest predation and nest parasitism along edge habitat compared to forest interior habitat in the Southern Rocky Mountains (Knight *et al.* 2000).
 - Roads and other corridors, a primary cause of fragmentation in this region, allow species to expand their ranges (Beauvais reported coyotes, red foxes, and bobcats expanding their winter range), increase competition with forest-adapted species (non-generalists), and increase predator-prey interactions with increased access (Beauvais 2000).

While the above studies attempt to document the impacts of roads, conclusive results that are site specific to the Project are not available. In order to document if impacts to wildlife are significant, one must collect enough information to determine changes in species populations, birth rates, growth, and/or survival (Hayden-Wing 1991). This information is not available for wildlife occupying the MSTI study area.

5.1.3.3 Disturbance

Many species are sensitive to harassment or human presence, which are often facilitated by construction activities and road access; potential reductions in productivity, increases in energy expenditures, or displacements in population distribution or habitat use can occur (Bennett 1991, Mader 1984). However, the magnitude of impact to the species often depends on the experience associated with the disturbance (Geist *et al.* 1978). Examples include transmission line presence creating: collision risk, avoidance behavior, and perching habitat, access road effects include: human disturbance of leks (e.g., sage grouse and sharp-tailed grouse), nests (e.g., ferruginous hawk), and dens (e.g., kit fox). Another example of road disturbance is elk avoidance of large areas near roads open to traffic (Lyon 1983, Rowland *et al.* 2000), with elk avoidance increasing with increasing rate of traffic (Wisdom *et al.* 2000; Johnson *et al.* 2000). A final example comes from Hayden-Wing (1991). They report significant declines in mule deer populations in Wyoming due to increased hunting access associated with access roads from development.

Wildlife disturbance along the MSTI alternative route links includes any activities, either temporary or ongoing, that would disrupt wildlife, temporarily or permanently displacing animals from where they would typically exist. The wildlife species that occur in different vegetation communities are described in Section 3.0. Disruption along the MSTI alternative route links is most likely to come from: (1) increased noise levels (i.e. construction); (2) increased vehicle traffic (i.e. construction, maintenance); and (3) structure presence (i.e. towers and conductor). Our analysis focuses on these sources of disruption to wildlife along the MSTI alternative route links. Through the use of current literature, current governing policies, and GIS we have analyzed wildlife resources on a per link basis and compiled impacts into Alternative level analysis. Below is also a brief list of studies involving disturbance impacts related to wildlife.

- Pre- and post-development big game numbers are similar in numerous instances following construction activities involved in road and well development (Hayden-Wing 1991, Reeve 1996, and Geist *et al.* 1978, Easterly *et al.* 1981).
- Fewer elk occur around drill sites after CO₂ well development (Brekke 1998).

- Disruption of watering activities and migration routes increase stress to wildlife species due to change induced from development associated with oil and gas production (Campbell and Remington 1981).
- Avoidance behavior has been observed from numerous studies involving development (Johnson and Lockman 1990, Campbell and Remington 1981, Rost and Bailey 1978, and Hayden-Wing 1991) with the highest avoidance behavior observed during hunting and calving periods (Hayden-Wing 1991).

5.1.4 MITIGATION

Species environmental protection measures would be incorporated in the POD that would directly and indirectly benefit biological resources and reduce impacts. In addition to project design measures specific mitigation measures are proposed to reduce impacts to biological resources. A summary of environmental protection and mitigation measures can be found in Table 5.1-2. The Environmental Protection Measures described in this report are preliminary measures that are part of the project description, but are not finalized or committed to until further discussions with the MDEQ and other agencies are conducted. Likewise, the Specifically Recommended Mitigation Measures are preliminary, and not committed to by NWE, until discussions are held on this subject with the MDEQ and other agencies.

Table 5.1-2 Environmental Protection and Mitigation Measures Pertaining to Biological Resources

Environmental Protection (EPM) and Mitigation Measure (MM) No.	Abbreviated Description (details can be found in Section 2.6)	Biological Benefit
ENVIRONMENTAL PROTECTION MEASURE		
1.1, 8.1	Restrict vehicle use outside ROW	Reduce potential mortality, injury, habitat loss and degradation
1.3	Preserve vegetation in areas where recontouring is not required	Reduce potential habitat loss and degradation
1.4	Revegetate areas of substantial ground disturbance	Reduce potential habitat loss and degradation
1.5	Develop a POD in coordination with agencies	Reduce potential habitat loss and degradation
1.6	Construction monitoring	Reduce potential mortality, injury, habitat loss and degradation
1.7	Brief supervisory construction personnel on site specific ecological issues	Reduce potential mortality, injury, habitat loss and degradation
2.8	Install fences and gates	Reduce human disturbance, access
2.13	Timing construction to avoid high impact scenarios (i.e. rainy season)	Reduce potential habitat loss and degradation
5.1	See 1.7	See 1.7
5.2	Develop species specific	Protect special status species

Table 5.1-2 Environmental Protection and Mitigation Measures Pertaining to Biological Resources

Environmental Protection (EPM) and Mitigation Measure (MM) No.	Abbreviated Description (details can be found in Section 2.6)	Biological Benefit
	mitigation measures for special status species	
ENVIRONMENTAL PROTECTION MEASURE		
5.3	Pre-construction sensitive plant surveys	Protect sensitive plants
5.4	Noxious weed plan	Reduce potential habitat loss and degradation
5.5	Limited ground disturbance	Reduce potential habitat loss and degradation
5.6	Avian electrocutions	Reduce avian mortality
5.7	Ground disturbance reclamation	Reduce potential habitat loss and degradation
5.9	See 5.2	See 5.2
6.1	Environmentally sound road construction	Reduce potential habitat loss and degradation
6.2	Rehabilitate disturbance	Reduce potential habitat loss and degradation
6.4	Controlled river crossings	Protect aquatic resources
7.1	Control dust from road construction	Reduce habitat degradation and reduce potential species injury
8.4	Control of hazardous material	Reduce potential mortality, injury, habitat loss and degradation
MITIGATION MEASURE		
1, 2, 3, 4	Limit road construction	Reduce potential mortality, injury, habitat loss and degradation
9	Timing limitations for construction and maintenance	Reduce potential mortality, injury, and disturbance
10	Span riparian areas	Reduce potential habitat loss and degradation
11	Limited tree trimming/removal	Reduce potential mortality, injury, habitat loss and degradation
12	Install marking devices	Reduce potential mortality and injury
13	See 9	See 9
14	Preconstruction surveys for ESA species	Reduce potential mortality, injury, habitat loss and degradation

6.0 IMPACT RESULTS

The impacts to biological resources as a result of construction of the 500 kV transmission line are summarized below. Impact levels are provided by link number in the impact tables in this section.

Vegetation, such as grassland and shrubland would be removed by the construction of access roads and structures and at construction staging areas. Impacts to riparian and wetland areas would be minimal as these areas would only be disturbed when absolutely necessary. Maintenance activities would not often result in additional ground disturbance. Increased crossing in agricultural land would result in more tower structures and access roads, thus increasing impacts to anthropogenic communities. Disturbance due to maintenance activities would also increase over the life of the Project due to increased structure and road placement in vegetation communities. Linear miles of land cover types crossed by link are discussed in Section 3 of this report and in the Land use technical report of this volume. Disturbance resulting from staging areas would be similar for all alternatives. Off sight-of-way access roads would be necessary in some location (site specific locations are not known at this time) but would be minimized where possible.

Access road construction and maintenance would impact native vegetation during line construction and project maintenance through disturbance and biological change. Links 4-2, 8, and 3-1 have the highest disturbance associated with them. Relatively high impacts are also associated with Links 16-1, 2-1, 16-2, and 25-12. Following construction, many of the road beds would be revegetated and treated to control noxious weeds. During vegetation recovery the likelihood of noxious weed invasion would increase. A weed control program would be created during the POD process. Project maintenance would create minor vegetation disturbance throughout the life of the project. Vegetation would not be greatly affected by occasional trampling from maintenance vehicles; however, the resulting ground disturbance and physical plant damage provide an opportunity for weed invasion. Adherence to the proposed weed management plan would reduce the likelihood of weed establishment as a result of maintenance activities. Proposed practices to reduce potential vegetation loss and noxious weed invasion would include seeding disturbed areas with appropriate weed-free seed mixes, using weed-free borrow materials, and inventorying and treating noxious weeds according to the developed noxious weed control plan.

Potential adverse impacts to wildlife associated with development of the transmission line can be separated into impacts associated with project construction (short term) and those related to operation and maintenance (long term change). The primary potential impacts include direct mortality, habitat loss and fragmentation, disturbance and displacement of individual animals, interference with behavioral activities, and disturbance resulting from increased public access. These types of impacts can be classified into three major categories; biological change, habitat fragmentation, and disturbance. These categories are discussed in more detail below. Links 4-2, 8, and 3-1 have the highest disturbance associated with them. Relatively high impacts are also associated with Links 16-1, 2-1, 16-2, and 25-12.

Installation and development of the proposed transmission line and activities such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction could cause direct injury or mortality to wildlife. Species with higher likelihood to be impacted include species with limited mobility, fossorial species, or avian species, as nests and burrows could be destroyed during construction. Construction related disturbances would be relatively short term (less than a year per area) and localized to the construction site or adjacent storage areas within a specific segment of transmission line. Disturbance associated with the installation and development of

the transmission line would result in some habitat loss and fragmentation. While a portion of disturbed areas would be reclaimed upon completion of construction activities, permanent habitat loss would occur within the footprints of support structures, and access roads.

Construction activities would result in disturbance and behavioral interference. Noise, fugitive dust, and activities associated with site clearing and grading, installation of support structures, construction of access roads and support facilities, and associated equipment could disturb and displace wildlife within and adjacent to impact areas. All wildlife species within or near impact areas would be susceptible to disturbance. Disturbance would have the greatest impact during migration and breeding seasons. Some species with small home ranges or limited dispersal ability might experience a greater impact. These disturbances would be short term (6 to 7 months) and concentrated within the activity area.

The construction activities could also result in accidental exposure to contaminants or fire or increased legal and illegal killing of wildlife. Accidental spills during equipment maintenance or refueling could result in temporary exposure to hazardous contaminants. Because spill prevention plans would be in place and impacted areas would be immediately reclaimed, and exposure would be temporary and restricted to the site of spill, impacts to wildlife would be unlikely. Accidental fires associated with construction and maintenance vehicles would result in the temporary loss of habitat.

The increased public access as a result of increased access roads may result in additional legal hunting and poaching.

Direct impacts to avian species could occur as a result of collisions with the proposed transmission line. Operation of the proposed transmission line would have the greatest potential impact on bird species, due to the collision threat posed by structures, transmission lines, guy wires, and ground wires. Most other wildlife would not be as impacted, since the presence of the transmission line, structures, and access roads generally does not present a barrier to migration, create excessive noise, or otherwise cause major behavior changes.

A variety of factors influence avian transmission line collisions: configuration and location of transmission lines; specific avian species and their tendency to collide with transmission lines; and the environment, such as weather, topography, and habitat (APLIC 1994, 2006). Line placement with respect to other structures and topography can influence the collision rate. Collisions usually occur near water or migration corridors and more often during inclement weather. Less agile birds, such as heavy-bodied birds or birds within flocks, are more likely to collide with overhead lines as they lack the ability to quickly negotiate obstacles. Some bird species, usually waterfowl, are prone to collisions with power lines, especially the grounding wires located at the top of the structures (MTDEQ 2008) though collisions with guy wires also occur. Raptor species are less likely to collide with power lines, perhaps due to their excellent eyesight and tendency to not fly at dusk or in low visibility weather conditions (MTDEQ 2008). Smaller migratory birds are at risk, but generally not as prone to collision because of their small size, ability to quickly maneuver away from obstacles, and because they often migrate high enough above the ground to avoid transmission lines. Permanent-resident birds that fly in tight flocks, particularly those in and near wetland areas, may be at higher risk than other species.

Areas of high avian collision risk include the Missouri River corridor (Links 1 and 2-1), Red Rock Lakes NWR (Links 16 1-4), and Clark Canon Reservoir (Links 16 1-4).

New transmission lines could potentially impact large birds, such as raptors, through electrocution. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device. Two factors influence the potential for avian electrocution: environmental factors such as topography, vegetation, available prey, and behavior; and inadequate separation between energized conductors and grounded hardware providing two points of contact (APLIC 1994 and 2006). MSTI transmission line design would be according to APLIC standards and would therefore pose a minimal risk of electrocution at best. This type of impact could occur along the entire line; however the likelihood of this impact is minimal.

Impacts may occur from increased raptor and corvid predation within the areas surrounding the support structures. In areas where suitable prey habitat is within view, perch sites can provide an energy efficient method for hunting. There is the concern that raptors may use the horizontal cross arms of H-frame transmission structures or single pole structures as perches while scouting for food. Concerns have been raised in some circumstances that the raptors and corvids could impact upland, grassland, and shrubland bird species. This type of impact is likely over the entire project area where occupied habitat for grassland and shrubland bird species occur. A summary of initial impacts by link for Montana and Idaho are included in Tables 6.0-1 and 6.0-2 respectively.

Table 6.0-1 Summary of Initial Impacts for Biological Resource by Link for Montana

Link	Initial Impacts for Biological Resources		
	High	Moderate	Low
1	3	1.1	1.9
2-1	9.4	14.6	2.6
2-2	5.4	3.9	11.3
2-3	4.9	2.9	12.7
3-1	22.3	3.8	4.4
3-2	0.2	0	0
4-1	5.3	1.2	2.6
4-2	59.4	2.4	2.2
4-3	20.2	1.8	4.5
4-4	0.1	0	0
7-1	4.5	6	1.6
7-2	4.5	6.2	1.5
7-3	5.3	0.1	0.3
7-41	4.9	0	0.1
7-42	1.9	0.8	0.3
7-43	0.1	0.7	1.9
7-5	0.1	0.5	1.2
7-61	5.8	5.9	4.3
7-62	0.4	0	0
7-63	4.8	0.5	1.3
7-71	2.2	0	0
7-72	3.7	0	0
7-8	8.3	1.3	1.5
7-9	3.1	0.1	0
8	33.9	5.1	4.1
11-21	3.2	0	0
11-22	8.9	0	0
11-23	21.9	0	0
11-3	16.2	2.1	0
11-4	14.4	1.8	0
13	3.2	0.1	0
16	50	10	0.7
18-1	49	5.7	0

Table 6.0-2 Summary of Initial Impacts for Biological Resource by Link for Idaho

Links	Initial Impacts for Biological Resources		
	High	Moderate	Low
18-2	26.5	0.3	0.2
20	17.9	2.1	0
21	82.6	0.5	1.8
22	25.3	0	0
23	26.7	2.3	0
24	27.9	0.5	0
25-11	23.7	1	1.2
25-12	39.8	0	0
25-2	12.8	2.2	1.1
25-3	21.9	0.4	0
25-4	16.8	3.8	2.2
26-1	12.6	0	0
26-2	3.4	12.5	11.9
26-3	37.6	0.6	0
26-4	43	0	0
27	0.4	0	0
28	2	0	0
29	30.1	0.1	0
30	13	0.8	0
31	20.2	0	0

6.1 SUMMARY OF TEMPORARY IMPACT RESULTS

Temporary impacts from the MSTI project would occur primarily through disturbance. Disturbance associated with construction and ground disturbance in grassland habitat would be temporary. Localized noise and dust would subside after construction is complete. Ground disturbance in grassland habitat would be reclaimed with native seed mixture. These impacts would occur throughout the entire project area. The occurrence would be isolated to specific segments and not spread over the entire project at any one particular time.

6.2 SUMMARY OF PERMANENT IMPACT RESULTS

Permanent impacts from the MSTI project would primarily occur from habitat change, habitat fragmentation, and disturbance. Habitats would be converted to earlier successional conditions due to vegetation clearing. Change would also occur be introduction anthropogenic structures in native habitat. Disturbance associated with human presences from access roads and maintenance activities would occur for the life of the project. Habitat fragmentation would occur from building access road in native habitat and interrupting flyways for avian species. These impacts would occur for the life of the project. Permanent impacts would occur throughout the entire project area.

6.3 RESIDUAL IMPACT RESULTS

Compliance with federal, state, and local regulations and implementation of mitigation measures described above would reduce initial impacts to no identifiable, low, and moderate levels as shown below in Table 6.3 for Montana and Table 6.4 for Idaho.

6.3.1 MONTANA

Residual impacts to biological resources resulting from ground disturbance and operations are summarized in Table 6.3-1. Residual impacts are the magnitude of impact following mitigation.

Table 6.3-1 Summary of Residual Impacts for Biological Resources by Link for Montana

Link Number	Linear Mileage summary of Biology Residual Impacts		
	High	Moderate	Low
1	0.3	3.9	2.9
2-1	0.3	13.0	12.5
2-3	0	4.9	15.6
3-1	0	24.5	7.8
4-1	0	7.9	5.6
4-2	2.5	56.9	4.6
4-4	0	0.1	0
7-2	0	3.7	8.5
7-41	0	8.1	0.3
7-42	0	0.8	2.2
7-5	0	0.1	1.7
7-61	0	5.8	10.2
7-62	0	0.5	0
7-72	0	3.8	0
7-8	0.2	9.0	1.9
7-9	0	3.1	0.1
8	1.1	42.0	7.2
11-21	0.2	3.1	0
11-22	0.2	8.8	0
11-23	0	21.9	0
11-3	0	14.0	5.2
11-4	0	19.4	3.4
13	3.9	0.8	0.2
16-1	1.0	15.5	13.6
16-2	3.2	21.4	4.7
16-3	0.2	27.4	3.0
16-4	2.4	6.1	0.2
18-1	0	58.7	5.5

6.3.2 IDAHO

Residual impacts to biological resources resulting from ground disturbance are summarized in Table 6.3-2. Residual impacts are the magnitude of impact following mitigation.

Table 6.3-2 Summary of Residual Impacts for Biological Resources by Link for Idaho

Link Number	Linear Mileage summary of Biology Residual Impacts		
	High	Moderate	Low
18-2	0.1	26.4	0.5
20	0	15.6	4.4
21	16.5	68.6	4.3
22	24.5	0.8	0
23	0	25.3	3.7
24	0	28.4	0
25-11	0	23.9	2.0
25-12	19.4	20.4	0
25-3	10.1	12.2	0
25-4	0	28.3	5.4
26-1	0	16.7	0
26-2	0	5.4	22.4
26-3	7.1	29.8	1.3
26-4	4.5	39.7	2.9
27	0	0.4	0
28	0	1.9	0.1
30	14.5	1.8	0
31	17.6	6.8	0

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APPENDIX A

Agency Coordination for the MSTI Project

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T.O. Smith	MTFWP	9/5/07
Art Rohbacher	Beaverhead NF	9/6/07
Denise Pengeroth	Helena NF	9/6/07
Jay Fredrick	Beaverhead NF	9/6/07
Mark Orme	Caribou-Targhee NF	9/11/07
Theresa Mathis	BLM	9/11/07
Ali Abousaid	Caribou-Targhee NF	9/11/07
Mark Wilson	USFWS	9/12/07
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Jerry Gregg	Reclamation-Idaho	11/1/07
Jeff Foss	USFWS	11/1/07
Alison Beck-Haas	USFWS	11/1/07
Patty Bates	Beaverhead NF	11/1/07
John Shochat	Ogden NF	11/1/07
Lisa Klinger	Caribou-Targhee NF	11/1/07
Nate Fisher	State of Idaho	11/1/07
Curtis Keetch	Caribou-Targhee NF	11/3/07
David Parish	IDFG	11/3/07

Personal Contacted	Agency	Data
Tom Ring	MTDEQ	11/14/07
T.O. Smith	MTFWP	11/14/07
Richard Newton	Caribou-Targhee NF	11/15/07
Art Rohrbacher, Jim Brammer	Beaverhead NF	11/15/07
Joe Lowe	Upper Snake BLM	1/17/08, 1/18/08
Gary Wright	Shoshone BLM	1/17/08
Jeremy Bisson	Burley BLM	1/17/08
Chris Servheen	USFWS	1/9/08
Ann Moser	IDFG	1/14, 1/28, 2/20, 2/22, 6/16, 6/23/08
George Stephens	IDFG	2/28/08
Angie Schmidt	IDFG	2/28/08
Scott Story	MTFWP	3/11/08
Lydia Bailey	MTFWP	10/07
Jim Roscoe	American Wildlands	4/3/08, 4/18/08
Janet Hess-Herbert	MTFWP	10/07
	The Wildlife Society MT	
Multiple Agencies	Meeting 2008	2/25-2/29/08
	The Wildlife Society ID	
Multiple Agencies	Meeting 2008	2/25-2/29/08